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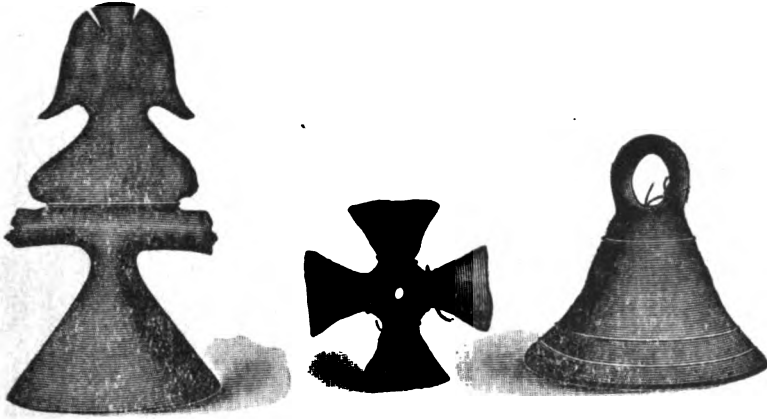
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PROCEEDINGS

OF THE

DAVENPORT ACADEMY



OF SCIENCES.

VOLUME VIII.

1899-1900.

PUBLISHED FROM THE INCOME OF THE

⁶Putnam Memorial Fund.

1901.



W. H. Pratt

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DAVENPORT, IOWA:

PUBLISHED FROM THE INCOME OF THE

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1901.

PUBLICATION COMMITTEE—1900.

MRS. MARY L. D. PUTNAM, *Chairman.*

PROF. W. H. BARRIS.

DR. C. H. PRESTON.

PROF. SAMUEL CALVIN.

EDWARD S. HAMMATT.

— — — — —

**The authors of the various papers are alone responsible for what is contained in them
The date of printing each form is given in the signature line.**

EDWARD BORCHERT, PRINTER.

PREFACE.

The Publication Committee of the Davenport Academy of Sciences takes great pleasure in presenting to the scientific world Volume VIII. of its proceedings.

It is nearly two years since the last volume was issued, and during this period many changes have occurred in the Academy. It has expanded from an institution with a small building into one occupying conveniently connected buildings upon one of the most desirable corners for a museum in Davenport.

The chief work of the Academy during the year 1900 was the remodeling of the old Presbyterian church recently acquired and building a commodious two-story brick passage-way connecting it with the Academy proper. The auditorium of the church has been redecorated and is named "Science Hall." It is planned to begin a course of scientific lectures this coming year, which, it is hoped, will be of great benefit to the community.

The scientific collections of Griswold College, which have been presented to the Academy, have been placed in the basement, and the Academy's valuable collection of birds has been carefully rearranged and labelled, as well as other departments of the zoölogical collections.

The card catalogue of the library has been completed to 1901, and the Academy now realizes more fully the value of the valuable scientific library it has received through its publications and gifts.

It is with deep regret that we announce the death of Dr. W. H. Barris, our beloved Curator and Corresponding Secretary, on June 10, 1901. His interest in the Academy from its beginning, his scientific attainments, and his charming personality make it difficult to fill his place. He was President of the Academy in 1876 and was a member of the Publication Committee from the publishing of the first volume.

Volume VIII. is opened with a biographical sketch and portrait of one of the founders, a former President and long time Curator of the Academy, Prof. W. H. Pratt. The biography, written by his friend Dr. C. H. Preston, records the debt of gratitude the Academy owes Prof. Pratt for his years of valuable and disinterested work in its behalf.

Two papers, one by Prof. Samuel H. Scudder of Cambridge, Mass., and Prof. T. D. A. Cockerell of Las Vegas, N. M., and one by Prof. Frederick Starr of the University of Chicago, have been presented to the Academy and are in progress of preparation for Volume IX., which, it is expected, will be published soon.

Acknowledgments are due to Prof. J. A. Udden and son of Rock Island, Ill., for their work in preparing the index of this volume.

DAVENPORT, October 18, 1921.

JUN 21 1902

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WILLIAM HENRY PRATT.

BIOGRAPHICAL SKETCH BY C. H. PRESTON.

To no one of its many earnest members is the Davenport Academy of Sciences more deeply indebted than to W. H. Pratt, the honored subject of this brief sketch. One of the four founders of the Academy, and a Life Member since 1877, he devoted himself to its interests throughout the best years of his life, counting no sacrifice of time or strength too great to be freely made for its welfare. As its President in 1880, as Recording and as Corresponding Secretary for many years, as a Trustee continuously from the beginning, as a member of the Publication Committee from its inception, and as Curator from 1875 until his removal from the city, October, 1890, he never for a moment neglected the duties of any position, but discharged them all faithfully and as a labor of love.

William Henry Pratt was born in Bridgewater, Mass., September 6, 1822, and died, after several years of failing health, in Minneapolis, Minn., December 3, 1893. With a natural love for investigation and study, he had, as a boy, but little time to devote to books and attended school but a few months in his life. His early youth was spent mostly at work in his father's sawmill in Bridgewater, and in 1838 the family removed to Chicago, where he followed the carpenter's trade. Here, in 1849, he was united in marriage to Miss Elizabeth M. Christian, and from this time until 1857, being an expert penman and accountant, he gave lessons in writing and book-keeping in evening schools, traveling from town to town throughout the State of Illinois, making his home first in Tremont and later in Peoria.

During these years he did much systematic reading, mostly in the direction of natural science, an interest in which increased with each succeeding year of his life.

In 1857 he removed with his family to Davenport, intending to open a commercial school, but finding one already established, he purchased a half interest of its owner, Joseph C. Lopez, and took charge

of the department of penmanship in this, the first "Davenport Commercial College." In 1859 "Professor Pratt," as he was now familiarly known, became sole proprietor of the school, and in 1865 he entered into partnership with Messrs. Worthington and Warde, but left the business in the fall of that year to take charge of the teaching of penmanship in the Davenport public schools, which position he held for fifteen years.

In his note book, under date December 7, 1867, occurs the following: "Went with Mr. Barler to Mr. Eads' office to-night to talk about organizing a Natural History Society." A little further on is this simple entry of unforeseen importance in the intellectual history of Davenport: "Dec. 14, 1867. Had another meeting at Mr. Eads' office to-night and organized the Davenport Academy of Natural Sciences — was elected Secretary." This was the beginning of an institution which, owing largely to his untiring labors, has steadily increased in influence with the advancing years.

To this organization all the time he could spare from his school and home duties was thenceforth given, and through it he was disinterestedly helpful to many studious young men, introducing them to, and wisely guiding them in, the paths of scientific research. More than one young man to-day, who has gained distinction as a student of nature, gladly acknowledges indebtedness to his helping hand. It was due to Mr. Pratt's influence and devotion to nature-study that J. Duncan Putnam, then a lad at school, became interested in entomological science.

Through his active influence in securing donations and exchanges from far and near the shelves of the Academy museum were continually enriched by valuable accessions in addition to his own frequent donations. These included, besides the results of his geological and archæological explorations for years, interesting collections of local shells and of animal skulls, and his entire private mineralogical collection numbering from one to two thousand specimens.

It was largely through him that the wealth of flint and stone implements, with other Indian relics so laboriously collected by Captain W. P. Hall, was added to the Academy treasures, and that the Parvin, Allen, and other collections were entrusted to its keeping.

For years, without pay and without thought of pay, he economized every fragment of time for Academy work; and never for a moment

were the care and labor he gave to it measured by the small money return in its power to make.

Besides classifying, labelling and arranging all specimens as received, he provided matter of interest for its meetings, conducted its correspondence and attended to the exchange of the Proceedings, in the publication of which he assisted. All accessions of whatever kind — to museum, library, correspondence, membership, etc., — he recorded systematically in separate books. His patient hand carefully restored, piece by piece, many of the most interesting specimens of ancient pottery in the Academy's collection which, when received from the mounds, had been in what seemed a hopelessly fragmentary condition; and a large part of the delineations for the earlier volumes of the Proceedings were laboriously and accurately made by him.

He organized from the younger Academy members various working sections — botanical, geological, historical, etc., — and assisted each in its especial pursuits.

One of his latest works, and one very near to his heart, was the giving of lessons, illustrated by the Academy's collections, to classes visiting it from the public schools. This was an experiment original with himself and he proved its practicability by giving a well-attended course of six lectures on as many topics, each successively to all the High School classes and the eighth and ninth grades in the grammar schools.

He had much of the teacher's instinct and was firmly convinced that the usefulness of the schools might be largely increased by utilizing as object lessons the collected riches of the museum as well as those of the workshop and field. He felt, too, that the interest thus awakened would react to the advantage of natural science, recruiting her ranks perennially with enthusiastic young workers. The diffusion of knowledge he looked on as an essential part of the Academy's work, and as a duty personal to each student of science as well. To this end he had at one time during his connection with the schools prepared and delivered a course of popular science lectures in many small places throughout the State of Illinois and had lectured on scientific subjects before teachers' institutes and elsewhere whenever occasion offered.

It was his pleasure always to have with him on the frequent short exploring trips which, through life, were his chief recreation, a group of young or old friends intent, like himself, on learning from nature at first hand.

Mr. Pratt was on terms of warm friendship with many scientific men of note with whom he was brought in relation through his position as corresponding secretary and curator of the Davenport Academy of Science. A visit to Agassiz's museum in earlier years he remembered as one of the "treats" of his life. In 1878 a new species of *gyroceras*, discovered by himself, was dedicated to him by his associate and friend, Dr. W. H. Barris. It is illustrated, as drawn and etched by his own hand, in plate x., vol. II., of the Proceedings.

With no time for extended authorship he yet prepared many valuable papers for the Academy publications. In addition to his annual reports as Curator and President, and careful descriptions of the numerous mound explorations he conducted, the following is a list of his principal writings:

1. Report on the Meteoric Shower of Nov. 14, 1868. *Proc.*, Vol. I., p. 14.
2. Force and Motion. *Proc.*, Vol. I., p. 75.
3. Report on Geological Examination of Section of Bluff, West Davenport. *Proc.*, Vol. I., p. 96.
4. List of Land and Fresh Water Shells Found at Davenport, Iowa. *Proc.*, Vol. I., p. 165.
5. Description of a Probably New Unio Shell Found on the South Bank of the Mississippi, Opposite Rock Island. *Proc.*, Vol. I., p. 167.
6. Shell Money and Other Primitive Currencies. *Proc.*, Vol. II., p. 38.
7. Shell Beds of the Vicinity of Davenport. *Proc.*, Vol. II., p. 156.
8. Left-handedness In Our City Schools. *Proc.*, Vol. II., p. 186.
9. Reminiscences of the Early History of the Academy. *Proc.*, Vol. II., p. 193.
10. Lightning Phenomena. *Proc.*, Vol. III., p. 91.
11. Report on Section of Bluff at Sixth Street. *Proc.*, Vol. III., p. 127.
12. An Artesian Well at Moline. *Proc.*, Vol. III., p. 181.
13. A Biographical Sketch of J. Duncan Putnam. *Proc.*, Vol. III., p. 198.
14. Report on Work of the Academy in Connection with the Public Schools. *Proc.*, Vol. VI., p. 290.
15. Note on *Mus musculus*, the Singing Mouse. *Proc.*, Vol. II., p. 190.
16. Note on Curious Relic from Cook Farm. *Proc.*, Vol. II., p. 256.
17. Note on Inscribed Rock at Sterling, Illinois. *Proc.*, Vol. III., p. 89.
18. Note on Geological Section of Bluff at East Davenport. *Proc.*, Vol. III., p. 106.
19. Note on the Chambers Rod and the Phœnix Mill Fire. *Proc.*, Vol. III., p. 179.
20. A Glimpse Into Our Future. *Proc.*, Vol. VIII., p. xiv.

Though quiet and unassuming, Mr. Pratt was a man of very decided and firm convictions. With strong likes and dislikes, he had no patience with dishonesty or insincerity in any shape—only the straight-

forward man could be his friend. Devoted to his family, his daily duties and the pursuit of the studies he loved, his life was simple and unobtrusive and his personal wants were but few. His home was ideal in the closeness of its every tie, the loving solicitude of each for all. His son Chester and three daughters, Ella, Lucy and Frances, were as children the frequent companions of his pedestrian trips, and later, in addition to their own chosen pursuits, assisted him in his Academy work. As was truly said of him at the time of his death, "Davenport has never known a man of gentler, kindlier manner, more even temper, sweeter disposition, purer aims and affections or more upright life." Not at all a man of affairs, he yet made much more of life than is to be found in mere financial success. Industrious, careful and methodical to a marked degree, he accomplished a great deal of work, much of which will long remain in evidence in the Academy's various collections. His portrait, placed as frontispiece to this volume, will awaken loving remembrance in the hearts of all who are left of his old associates and friends.

A GLIMPSE INTO OUR FUTURE.

BY W. H. PRATT.

READ BEFORE THE ACADEMY JUNE 13, 1890.*

Friends of the Academy and of Education and Progress :

I have proposed "A Glimpse into our Future" with no pretence to prophecy but merely to point to what all can surely see as well as I and to take the opportunity of offering some suggestions in connection therewith.

Often while occupied in this building in looking backward in the contemplation and earnest study of the relics of the past of humanity on this continent, relics dating back to the glacial period or earlier, the curious and meager evidences and representations of nearly the very dawn of civilization in America, we are, on turning to the present, almost startled at the contrast between the "Stone Age" and this.

Here on the same soil trodden by those our remote predecessors ; occupying the same hills and valleys ; dwelling in houses where theirs stood ; sitting where they sat and viewing the mighty river rolling at our feet as at theirs, we suddenly realize that, though in the same, we are almost living in a new world ; that we are entering, or have already entered, upon the bright "Age of Electricity," full of possibilities and, indeed, of certainties of further advances and developments altogether inconceivable at our present point of view.

What an immense stretch of human progress attained by courage, effort, skill and endurance, by suffering, sacrifice and irrepressible ambition is comprehended in this great change !

Fascinating as it is, we cannot stop now to trace it step by step. The new development has burst upon us in almost dazzling brilliancy and with startling suddenness and rapidity.

The time was ripe for it, an epoch-marking activity prevailing all over the scientific world ; and while still in the transition state from

* This paper was not meant for publication except by the local press, but it seems appropriate that it should now be given, in connection with its author's portrait and biographical sketch, as a last earnest word for the institution to which his life was devoted.

the ways of the past to those of the future—from the 19th century to the 20th—a rapid transformation, unparalleled in the world's history, is already accomplished. Looking back only so far as the short history of this Academy association, and contrasting the methods in daily life then and now, the change is amazing. Look back fifty years, and those whose memory does not reach so far are scarcely able to comprehend the ways of that, their grand-parents', time. Today the progress of change is even more rapid than ever before. One cannot look out for ten minutes from the door of this building without seeing many evidences of this and feeling that even ourselves are being—or are at least in immediate danger of being—left behind.

It is to this point especially that I desire to call attention, and such is the object of these remarks.

In expectation of leaving the city after a residence of fully one-third of a century here, one-half of a busy life, and a large portion of this time in the Academy,—a work I preferred to any other,—I cannot but feel regret. I should be glad if I could find a way to present to the members and in general, also, to the wide-awake, thoughtful and public-spirited portion of our community, one question for their thoughtful consideration which I will formulate by and by.

I do not like to do this without offering, also, some suggestions upon the situation, the needs and possibilities, as well as the true interests of the people as seen from my standpoint. First allow me, then, a brief review.

It is now over twenty-two years since the first actual move was made to organize the Davenport Academy of Natural Sciences, and the scientific work was begun in a very small and unpretentious way, but increased until it attracted attention and the Academy was everywhere recognized as one of the very few really active scientific societies in this country. It was commenced without any funds whatever and has always had to contend against the difficulty of want of means to prosecute its work to the best advantage.

Some noble acts for its establishment and support are on record. Without them it could not have survived. Some earnest and successful efforts to relieve it from difficulties and hindrances have been made, but these (except the gift of the lot and erection of the building) were but temporary. It all did not provide a *permanent* establishment, did not obviate the necessity for further and continued provision and support.

It is an institution in which our citizens feel a just pride and on account of which they have been much credited for intelligence and liberality in maintaining it — one which has enlisted the earnest, persistent and self-sacrificing labors of noble workers now gone from us and whose places are not filled. With every dollar expended has been applied much more in cheerful, hopeful labor for the cause the institution represents — *scientific education*.

The annual subscription for five years to meet current expenses and keep the work going on — which was a noble act but nevertheless only a temporary expedient never intended to be continued indefinitely — a subscription which has sufficed to meet a portion of the small expenditures, expires with next year.

The present arrangement for the daily routine work, even if it were at all adequate—which it is not—could not in the inevitable order of human events continue more than a comparatively short period.

Now it certainly can never be that an institution directly connected with the highest public educational interests can be long dependent upon the presence of any one person, or two, or three, for its successful guidance and support. Attention to the matter should not be too long delayed and provision should be made to meet these changes before the dwindling process has gone too far. If the Academy is to be sustained, a new departure, financially, is absolutely necessary. It must be placed on a solid foundation. It cannot always live “from hand to mouth” and do good work. The constant attitude of a beggar tends to inspire contempt.

The institution is fully worthy of an independent position, and to place it so should be the care of our citizens.

It may be said that somebody has already furnished considerable money to build up and support the Academy. This is true, and upon a careful examination of the records I can present the following approximate statement of the moneys received from the community during the whole twenty-two years :

Regular members' fees and dues.....	\$ 5,325 00
Net proceeds of lectures.....	325 00
Net proceeds of entertainments.....	1,950 00
Total patronage.....	7,600 00
Cash contributions, including life memberships.....	11,000 00
	\$18,600 00

For the \$7,600 the patrons have had in return the usual privileges of membership, for which the fees paid were not exorbitant—were, in fact, unusually light. For the \$11,000 contributed it is certainly not extravagant to assume that it has been fully returned to the public by the effect of the reputation it has given the city for appreciation and support of scientific progress; and it should not be forgotten that a very considerable portion of this amount has been contributed by the active members themselves and about \$1,000 of it has come from distant friends.

Today the actual money value of the building and contents (the latter very difficult to estimate), i.e., library, natural history and archæological collections, cases, etc., is probably scarcely short of \$100,000. The real estate is worth fully \$8,000. The value of the collection of archæological relics is immensely increased by the fact that, while it far excels any other of its kind and represents this mound district very perfectly, the opportunity for making such collections in this region is past.

The whole, by its articles of incorporation, is entirely under the management of the regular and life members.

It has a permanent fund at interest, now amounting to \$1,200. The indebtedness is something less than \$800 and there is no incumbrance on the property. Like all scientific organizations, the Academy is in no way a money-making institution—could not be in the nature of the case, as the two objects are wholly incompatible; but economy is nevertheless absolutely essential to success. None can be more thoroughly aware of this essential than the competent and prudent persons who have had direction of the financial proceedings and management of the funds. A familiarity with the conduct of its affairs or examination of the records proves that there has been no extravagance, no careless, wasteful or misapplied expenditures. All the means furnished have been applied as economically as possible to the legitimate work of such an organization.

Exchanges and contributions to library and museum are coming in as heretofore, but the *work* is gradually diminishing as the years go by. Workers drop off and means to employ help are wanting.

The financial methods of the past, while the proper and only possible methods under the circumstances, were necessarily such as are adapted only to years of infancy. The Academy has now reached its majority and should take its position among the established institutions

of the city and the state. An enduring scientific institution must be on a broader and more reliable basis, not dependent for its support upon occasional expedients and spasmodic efforts, but on a more comprehensive plan, equipped to accomplish more of value to the community. On this point I would offer a few suggestions toward an outline of the Davenport Academy of Natural Sciences of the future, in and for and worthy of the twentieth century upon which we are so soon to enter, and of the progressive city of its birth and growth.

First, as to *what it should do*.

It is, I believe, a recognized principle that educational work — instruction for the people — is and must be the real foundation of all successful scientific institutions. To conform to this principle, to come as near to the *people* as possible, and to be of value to the cause of true education, a prominent feature of its work must consist in class instruction, viz.: classes from the public schools, day classes of other persons, evening classes of adults. The subjects of lessons would embrace zoölogy and its subdivisions, botany and forestry, physiology and hygiene, physical geography and meteorology, geology and palæontology, chemistry, physics, technical drawing, and such other scientific branches as may be found practical and desirable; also explorations and collections, original scientific research and experiment, scientific papers (original), lectures by faculty, members and others, *conversazioni* for free discussion; entertainments and excursions; publications (established and regular); library (pamphlets and paper-covered volumes should be bound) and a complete subject catalogue made and kept always up to the time, to make the great amount of scientific, statistical and historical matter here gathered available to the public. The occasional purchase of a volume of especial importance, not obtainable by exchange, would add greatly to the value of the library. The community would ere long become aware of its rich accumulations and avail itself of it, and thus their interest in the institution and its support would be increased. On these several points I will particularize a little so as not to be misunderstood.

As to *class instruction*: The experiment already made, and extending nearly a year and a half, of bringing the pupils of the public schools directly into the Academy rooms for systematic scientific instruction, illustrated by ample collections of specimens for their close inspection in connection with the lesson, a plan which originated with the Davenport Academy, has already been amply sufficient

to demonstrate the feasibility, usefulness and popularity of this method. It has, moreover, become plain that the same might be advantageously extended to one or two lower grades, and all to come oftener,—say once in each month. There might then be two or three lessons upon the same subject. The influence of this work would soon appear in the schools. Teachers tell me it has already done so. The obvious advantage of this method is that it makes possible a much more complete illustration with the actual objects than could be made by means of such collections as could be found at each school.

The other classes mentioned would not be expected to be kept up constantly, but according to the demand, a course from time to time in either branch as desired, a moderate fee being charged. In addition to the faculty, which would be small, members or other persons of special ability could always be found to give the lessons, receiving as compensation the fee paid by the pupils, or a portion of it, thus making these lessons largely self-supporting. This arrangement would meet a very decided want in this community and would be increasingly appreciated and patronized.

In *explorations and collections* the chief object should be not merely to enlarge the collections, but rather to secure additional types and forms in archæology and anthropology, to complete series of all local natural history departments and systematic series in the various other branches, and to gather—where it can be done without much expense—material desirable for exchange.

Original Research. This would consist principally of exhaustive study of the collections in hand and of local natural history subjects, though not necessarily confined within those limits. New discoveries are always desirable.

Scientific papers would be chiefly results of these researches, to be read at Academy meetings and published in its Proceedings or memoirs.

Lectures. These might include a wide range of subjects of popular interest, not strictly scientific in the ordinary sense, and should tend not only to develop local talent and interest, but to bring noted persons of the scientific world among us occasionally to give a fresh stimulus to scientific study, reading and observation. The greatest benefit would be derived from lectures by making them instructive and popular rather than profitable pecuniarily.

Conversaciones or Symposia. In the early days of the Academy we found these occasional meetings for the discussion of subjects of inter-

est—practical, theoretical or speculative—to be enlivening and agreeable and to promote sociability and prevent stagnation.

Entertainments. Such of these as might be given should, perhaps, usually be in connection with some scientific or historical exhibit, dramatic or otherwise, and should include occasional excursions.

Publications. Maintaining our connection and intercourse with the scientific world by the distribution of our reports of proceedings with much more regularity than heretofore, should be a matter of more careful attention and prominence, be better supported than it has been, and should not be left as a burden to be borne almost wholly by one devoted individual. As soon as it should become established as a regular issue, the subscription to volumes and sale of special papers published would meet the whole expense of publication. Upon this mainly depends the building up of the library, the necessities of which I have already referred to.

Now, all this absolutely necessitates enlarged space for collections, meetings and work. This need must be squarely met by the provision of a building fund to be expended in the erection of, substantially, the larger portion of the structure originally designed twenty-three years ago; also, in rendering the whole more secure against fire and burglary and in so improving the present basement as to render it dry and suitable for occupancy, having in it, for example, a laboratory and aquarium. The new building, 45x75 feet inside, will afford an audience room ample for meetings, public lectures and entertainments. The museum, being in that part, would have more space—45 x 75—with two galleries all around and lighted from the roof. The library, occupying the present museum room and cases (as originally intended) would also have greatly extended shelf and reading room, with the books enclosed against dust, loss and injury. A fund of \$15,000, it is believed, would meet this demand and erect a building sufficient and suitable and one of which citizens would not be ashamed.

To carry out the plan of work as suggested there would be required a competent professor of natural sciences at a salary of say \$1,500, and a curator for say \$600. This would require an endowment fund of perhaps \$25,000. There must be a library fund of say \$5,000 and a publication fund of say \$5,000, making a permanent fund of \$35,000 of which the interest only could be used. This, with the building fund of \$15,000, would call for an aggregate of \$50,000. (Membership fees and dues, admission fees, etc., would probably meet the current minor expenses).

Does some one say, "Fifty thousand dollars is a good deal of money?" That depends upon the nature of the object to be secured by it. It is not an extravagant sum to expend in equipping a permanent and valuable institution of public benefit. To appropriate some of the surplus capital not in use in business to such a purpose is not giving it away: it is keeping it here invested for your own and your children's benefit. It is but transferring some dollars from one kind of work to another more active, and instead of lying there simply drawing interest for the owner, making them of benefit to the public, including himself and his posterity. It is by no means a chimerical scheme, but thoroughly practical and practicable.

When, not long ago, the plan was proposed of establishing an endowment fund for the especial purpose of securing the constant services of an efficient manager and instructor in natural science, the first citizen who was consulted offered at once to start a subscription with \$1,000 for the purpose. Surely, there must be more such men. And given a good, sound, well-considered plan, we may find that the ladies, who have already borne so noble a part in furnishing the means, the talent and the persistent labor, have not exhausted their interest or their resources and are not the only women who possess the appreciation, spirit and ability to aid in establishing a good work. For encouragement in this, note the fact that ladies of Boston and vicinity took up the work, when otherwise it seemed hopeless, of raising the large fund required for securing, preserving and properly arranging and beautifying the Great Serpent Mound and grounds, situated in Ohio. See also the Elizabeth Thompson Fund to aid in worthy scientific work of societies not possessing ample means for large expenditures. Again, there are several non-resident friends, a number of them large owners of Davenport property, and some of them former residents of the city, whose names appear on our records as contributors of several hundreds each toward this building and the publication of the Academy Proceedings and to the general fund. These would doubtless aid the proposed movement with their characteristic and far-seeing liberality; and other such persons, having an interest in scientific educational progress, would join them in it, as the establishment of a permanent fund would naturally commend itself to their judgment as the wisest course.

Further, it is understood that not long since certain bequests were provided, or were in contemplation, for the especial object of the

future maintenance and support of competent scientific instruction in the Academy. This is perhaps contingent upon a reasonable assurance of the permanency of the organization and the actual establishment of the fund would be followed by its enlargement by such occasional bequests. Still some other possible—perhaps not quite improbable—sources of aid and support there might be if once the ball were set rolling, as, for example, specific appropriations by city, county or state, and from the public school fund for regular instruction of school classes. Thus we may see that the sources from which help would come toward the accomplishment of the work when fairly entered upon, are probably much more various and numerous than usually occurs to persons at first thought upon the subject.

As to method of personal contributions: Subscriptions might very properly be made, if persons see fit to do so, in the form of life membership fees—\$100 each—any number of them, making life members of such individuals as the subscriber might designate, and to be accepted by the Academy on the election of such persons as members, each of whom would then have an equal voice in the management of the affairs of the institution. An important point, in my opinion, is that, if possible, subscriptions to such fund, and these life memberships, should not be made conditional upon the whole proposed sum, or any fixed amount being subscribed before they should become payable. This condition involves so much delay that it would be very much better if the subscriptions should be paid in, put at interest at once, and the work started up as fast as the interest becomes available. The increased activity would afford encouragement, awaken interest and help in securing funds. And yet those who preferred to do so, if any there were, might still make conditional subscriptions.

The opportunity is a grand one. In what small city, I ask, is it equaled? Look at it!

There is already accumulated here, as a foundation, collections not only of priceless worth scientifically, but of cash value much beyond the amount now required to establish it permanently here, occupying a building and beautiful lot owned by the Association. The Academy is a Davenport institution known far and wide, through which our city has become known among the cultured circles in nearly every part of the world, gaining a reputation of great value which should not be forfeited. Moreover, it is already and has long been *at work*.

Though cramped by want of sufficient means and working force,

its work has not ceased ; it is going on continuously and successfully ; it has not to be begun as an uncertain experiment ; the way is well marked out with an experience of over twenty years and has but to be continued, improved, strengthened, expanded by more means and appliances. The most difficult point has been passed.

A city is known by its institutions and its treatment of them.

Let the opportunity pass—let the needed support be withheld and the work starved out, as it will be unless efficient action is taken—and an equally favorable combination of conditions is scarcely to be hoped for at any future time. The institution and its work and progress may easily be maintained and a fresh impetus imparted. To resuscitate it if allowed to lapse might be well-nigh impracticable.

Thus, then, comes the question to be considered by this community, viz.: Shall an Academy of Natural Sciences be maintained in Davenport? It still remains to be answered by the action of the prosperous and well-to-do people of this flourishing city. The past twenty-two and a half years have seen the inception, building up and carrying on of the work thus far, but have not furnished a final answer to the above question.

Is it not worth \$50,000 to establish such an institution, on a permanent foundation, to maintain and increase the reputation of the city for educational spirit and advantages, rather than to let it go down or go away—to lose the future benefit of the great amount of work already done here and allow some other city to take the lead in this regard? Can you, citizens, afford it?

With the unmistakable indications of a renewed activity and continued progress ; with a freer avenue of communication and commercial intercourse with the world soon to be opened by the Hennepin canal at our doors ; with the increasing importance of the government arsenal ; with the utilization of the immense Rapids water-power, certain to come in the near future ; and when, about the beginning of the coming twentieth century, the census returns shall show Davenport with fifty thousand citizens, shall the city still contain an Academy of Natural Sciences, grown with its growth, ranking among the three or four most active American scientific societies and bearing an important part in the educational facilities of the city?

Or, on the contrary, shall we, citizens, let it go to some other locality, there to continue its work and growth? The choice must be made. Die it cannot. It has accomplished too much, has too much

value, too much vitality and too many friends to become extinct or to lose its identity and independent existence by absorption by some wealthier association. That, at least, must not be.

There is no lack of means in Davenport, means which could be spared to secure the permanent location and maintenance of many such institutions of importance to the culture, welfare and educational progress of this community, without encroaching upon the capital employed in active business enterprise. Will it not pay to provide for this? Will it not help to attract hither the best class of citizens, and hence to advance other lines of public improvement? Will not failure to support it be discreditable and a lasting reproach? It is time that the matter should be canvassed. Let it be no longer ignored by those who are actively interested not only in prosperity for the sake of profit, but also for the true interests of humanity. Let the responsibility of representative and influential citizens be recognized. Let discussion be had, suggestions presented and the matter, instead of going by default, be finally determined according to the rank and place which our intelligent and public-spirited people intend our city to hold in the future.

PROCEEDINGS
OF THE
DAVENPORT ACADEMY
OF
NATURAL SCIENCES.

VOLUME VIII

CATALOGUE OF THE DESCRIBED ORTHOPTERA
OF THE UNITED STATES AND CANADA.

BY SAMUEL H. SCUDDER.

Ever since the publication of my "Catalogue of the Orthoptera of North America described previous to 1867" * (Washington, Smithsonian Institution, 1868, 8°), I have kept the same up to date, on slips as a "card catalogue," and the number of entries is now immensely greater than then. This list I hope to publish when the century has closed, so as to have it include all forms described or treated during the eighteenth and nineteenth centuries; like the last it will be an Index to the species, not a Systematic Catalogue of them, though containing the material for such a work.

This manuscript material I have used in compiling the present catalogue, which is the first attempt at a complete synonymic list which has been made. It is confined to the United States and Canada, and is believed to include every species which has been described as coming from that territory (excepting some of Walker's), each referred as far as possible to the proper genus. The generic vicissitudes of the

* This should have been entitled "Index" and not "Catalogue," and was so given in my manuscript.

proper specific name of each species is indicated by references to first use under each, but of the synonyms, only the originally designated generic name is quoted. When no generic name is appended to a reference, it is to be understood that the species is there referred to the same genus as in the present catalogue.

The list is arranged in systematic order as far as the species, but these are given alphabetically, for in the large genera at least they are thus more readily found, while an alphabetical index to the accepted genera will be found at the end. Brief general indication of geographical range within (but not outside) the limits of our territory follows each species. Varieties are not considered.

In a few cases, where genera have been recognized as found within our territory but the species of which are undescribed, descriptions of the species have been added in an Appendix, and by the liberality of the Academy most of these are figured.

The present catalogue contains the names of 856 species,* divided among the families as follows: Forficulidae, 14; Blattidae, 32; Mantidae, 17; Phasmidae, 11; Acridiidae, 524; Locustidae, 194; Gryllidae, 64. In some genera no doubt the number of described species will be reduced by a critical study, but in nearly all such cases it is highly probable that other still undescribed species already exist in our collections.

The completion of this catalogue renders possible for the first time a numerical comparison between the Orthoptera of Europe and North America north of Mexico. Taking Brunner's *Prodromus der europäischen Orthopteren* as a representation of the European fauna, the following table will show the relative number of species in the different families in Europe and North America:

FAMILIES.	UNITED STATES.	EUROPE.
Gryllidae	64	33
Locustidae	194	214
Acridiidae	524	148
Phasmidae	11	4
Mantidae	17	13
Blattidae	32	23
Forficulidae	14	26
Totals	856	461

* A few additions have been made to the Catalogue since this count was made, but too few materially to affect the figures and proportions given here and beyond.

Or, reducing these numbers to percentages, the result may be thus shown:

FAMILIES.	UNITED STATES.	EUROPE.
Gryllidae	7.5	7.2
Locustidae	22.7	46.4
Acridiidae	61.2	32.1
Phasmidae	1.3	0.9
Mantidae	2.	2.8
Blattidae	3.7	5.
Forficulidae	1.6	5.5

These tables show that the greatest contrast appears in the Acridiidae, and we may give a further analysis of this difference in the following table:

SUB-FAMILIES.	ACTUAL NUMBERS.		PERCENTAGES.	
	U. S.	EUROPE.	U. S.	EUROPE.
Tettiginae	38	6	7.3	4.1
Mastacinae	1	0	0.2	0.
Tryxalinae	90	57	17.2	38.5
Oedipodinae	154	32	29.4	21.6
Pyrgomorphinae	0	2	0.	1.4
Pamphaginae	0	34	0.	23.
Acridiinae	241	17	46.	11.5
Totals	524	148	100.1	100.1

This shows clearly that Europe is peculiar for its Pamphaginae and America for its great preponderance of Acridiinae and next of Oedipodinae. The American preponderances are largely due to the vast development of *Melanopli* and in a lesser degree of such Oedipodine genera as *Hippiscus*, *Trimerotropis*, *Arphia*, *Circotettix* and *Mestobregma*.

In the Gryllidae, America is peculiar for its Eneopterinae (7 sp.), unknown in Europe, and in the Locustidae for its large development of Stenopelmatinae, 77 species against 5 in Europe (largely due to its *Ceuthophili*) and of *Conocephalinae*, 48 species against 6 in Europe; while in the same family Europe has a rich representation of *Ephippigerinae* (53 sp.), wholly wanting in America, and several sub-families — *Meconeminae* (3 sp.), *Saginae* (2 sp.), *Locustinae* (6 sp.), *Callimeminae* (4 sp.), and *Heterodinae* (6 sp.), all also unrepresented in America. Other sub-families found in Europe and not in America are *Pyrgomorphinae*, 2 sp. (*Acridiidae*), *Empusinae*, 3 sp. (*Mantidae*), and

Ectobinae, 17 sp. (Blattidae); while other sub-families represented in America and not in Europe are Pseudophyllinae, 2 sp., and Gryllacrinae, 1 sp. (Locustidae), Mastacinae, 1 sp. (Acridiidae), Bacunculinae, 5 sp., and Anisomorphinae, 4 sp. (Phasmidae), and Nyctoborinae, 2 sp., Panchlorinae, 2 sp., Oxyhyaloinae, 1 sp., and Panesthinae, 1 sp. (Blattidae).

Only 26 of the 108 genera of European Orthoptera are recognized in the United States and half of these are cosmopolitan. The number of American genera is 205.

In 1897 I published a "Guide to the Genera and Classification of the North American Orthoptera found north of Mexico" (Cambridge, E. W. Wheeler, 8vo.). The present work is a companion to that, and by the aid of the two it should now be found possible for everyone having a fair access to the literature to study and arrange his own collections with comparative ease. This has not hitherto been the case, and I trust that these works may stimulate the study of our Orthoptera, which are as yet very imperfectly known.

Cambridge, Mass., September 30, 1899.

CATALOGUE OF THE ORTHOPTERA OF THE UNITED STATES AND CANADA.

FORFICULIDAE.

LABIDURA Leach.

riparia Pall., Reise, ii, anh., 30 (1773)—Forficula.

Dohrn, Stett. ent. zeit., xxiv, 313-316 (1863).

pallipes Fabr., Syst. ent., 270 (1775)—Forficula.

? *dentata* Fabr., Ibid., 270 (1775)—Forficula.

gigantea Fabr., Mant. ins., i, 224 (1787)—Forficula.

bilinata Herbst, Fuessl. Arch. ins., vii-viii, 183, pl. 49, fig. 1 (1788)
—Forficula.

maxima Vill., Linn. ent., i, 427, pl. 2, fig. 53 (1789)—Forficula.

bidens Oliv., Encycl. méth., vi, ii, 466-467 (1792)—Forficula.

crenata Oliv., Ibid., vi, ii, 467 (1792)—Forficula.

erythrocephala Fabr., Ent. syst., ii, 4 (1793)—Forficula.

? *flavipes* Fabr., Ibid., ii, 2-3 (1793)—Forficula.

morbidus Serv., Ann. sc. nat., xxii, 35 (1831)—Psalis.

bivittata Klug, Burm., Handb. ent., ii, 751-752 (1839)—Forficula (Forficesila).

suturalis Burm., Ibid., ii, 752 (1839)—Forficula (Forficesila).

? *bicolor* Fisch. Wald., Ent. russ., iv, 42 (1846)—Forficula.

fischeri Motsch., Fisch. Wald., Ibid., iv, 354 (1846)—Forficula.

affinis Guér., Sagra, Hist. phys. Cuba, An. art., 330-332, pl. 12, figs. 2, 2a (1857)—Forficula (Forficesila).

xanthopus Stål, Ofv. vet. akad. förh., xii, 348-349 (1855)—Forficesila).

amurensis Motsch., Bull. soc. nat. Mosc. xxxii, ii, 499 (1859)—Forficula.

Introduced: Gulf Coast.

ANISOLABIS Fieber.

maritima Bon., Géné, Monogr. Forf., 9-10 (1832)—Forficula.

Serv., Orth., 27-28 (1839)—Forficesila.

De Haan, Verh. nat. gesch. Ned. bezitt., Orth., 240 (1842)—Forficula (Forficesila).

Fieb., Lotos, iii, 257 (1853).

Fisch., Orth. Eur., 68, pl. 6, fig. 4, 4a-d (1853)—Forficula (Labidura).

Dohrn, Stett. ent. zeit., xxiii, 226 (1872)—Forcinella.

Dohrn, Ibid., xxv, 293-294 (1874)—Brachylabis.

alipes Mus. Berol., teste Fieb., Lotos, iii, 257 (1853)—Forficula.

? *japonicus* Hag., Proc. Bost. soc. nat. hist., xi, 399-400, fig.; xii, 139 (1868)—Hodotermes.

Introduced: Seaboard from New York to New Orleans.

SPONGOPHORA Serville.

brunneipennis Serv., Orth., 30-31 (1839)—Psalidophora.

Scudd., Proc. Bost. soc. nat. hist., xviii, 330 (1876).

New Jersey to Nebraska, Texas and Arizona.

FORFICULA Linné.

aculeata Scudd., Proc. Bost. soc. nat. hist., xviii, 262-263 (1876).

Northern U. S. east of Mississippi River.

auricularia Linn., Syst. nat., ed. x, i, 423 (1758).

cyclolabia Schmidt, Verz. Krain Orth., 77 (186-).

macrolabia Schmidt, Ibid., 78 (186-).

major De Geer, Mém., iii, 545-552, pl. 25, fig. 16-25 (1773).

FORFICULA (Continued).

parallela Fabr., Syst. ent., 270 (1775.)

media Marsh., Col. Brit., ii, 530 (1802).

neglecta Marsh., Ibid., ii, 529-530 (1802).

infumata Mühlf., Charp., Hor. ent., 70 (1825).

borealis Leach, Steph., Ill. brit. ent., Mand., vi, 5-6, pl. 28, fig. 3 (1835).

forcipata Steph., Ibid., vi, 6, pl. 28, fig. 4 (1835).

lurida Fisch., Orth. Eur., 75-76, pl. 6, fig. 12a-b (1853).

Introduced: New York, New Jersey.

exilis Scudd., Proc. Bost. soc. nat. hist., xviii, 262 (1876).
Texas.

percheroni Guér.-Perch., Gen. ins., vi, 4, pl. 7 (1835-1838).

elegans Klug, Burm., Handb. ent., ii, 753 (1839).

bipunctata Scudd., Bost. journ. nat. hist., vii, 415 (1862)—Sphingophora.

Massachusetts (accidental?).

pulchella Serv., Orth., 42 (1839).
New York.

SPHINGOLABIS Bormans.

californica Dohrn, Stett. ent. zeit., xxvi, 85-86 (1865)—Forficula.
Borm., Biol. centr. amer., Orth., 12, pl. 2, fig. 20 (1893).
California.

taeniata Dohrn, Stett. ent. zeit., xxiii, 230 (1862)—Forficula.
Borm., Biol. centr. amer., Orth., 12, pl. 2, figs. 17-19 (1893).
Texas to Oregon and California.

LABIA Leach.

burgessi Scudd., Proc. Bost. soc. nat. hist., xviii, 266-267 (1876).
Florida.

guttata Scudd., Proc. Bost. soc. nat. hist., xviii, 265-266 (1876).
Texas to Florida.

melancholica Scudd., Proc. Bost. soc. nat. hist., xviii, 267-268 (1876).
Texas.

minor Linn., Syst. nat., ed. x, i, 423 (1758)—Forficula.
Leach, Edinb. encycl., am. ed., viii, 707 (1816).
Fieb., Lotos, iii, 257-258 (1853)—Copiscelis.
Friv., Orth. Hung., 46-47 (1867)—Forficesila.

?*livida* Zschach, Mus. Lesk., 46 (1788)—Forficula.
minuta Scudd., Bost. journ. nat. hist., vii, 415-416 (1862).
 Europe. U. S. and Canada east of Rocky Mts.

BLATTIDAE.

BLATTINAE.

THYRSOCERA Burmeister.

cincta Burm., Handb. ent., ii, 499 (1839).
mexicana Sauss., Rev. mag. zool., 1862, 168 (1862).
sallei Sauss., Ibid., 1862, 168 (1862).
 Texas.

ISCHNOPTERA Burmeister.

bolliana Sauss.-Zehntn., Biol. centr. amer., Orth., 40 (1893).
 Texas, New Mexico.
borealis Brunn., Blatt., 133 (1865).
 Nebraska to Minnesota.
consobrina Sauss., Orth. Amér. moy., 88 (1864).
occidentalis Sauss., Ibid., 87 (1864).
 Texas, Louisiana.
couloniana Sauss., Rev. mag. zool., 1862, 169 (1862).
lata Brunn., Blatt., 135 (1865).
 Texas.
divisa Sauss.-Zehntn., Biol. centr. amer., Orth., 40 (1893).
 Georgia.
hyalina Scudd., Trans. amer. ent. soc., ii, 307 (1869).
 Delaware.
inaequalis Sauss.-Zehntn., Biol. centr. amer., Orth., 36, pl. 6, figs.
 14-17 (1893).
 Texas.
nigricollis Walk., Cat. Blatt. Brit. mus. 118 (1868).
 Georgia.
pennsylvanica De Geer, Mém., iii, 537, pl. 44, fig. 4 (1773)—Blatta.
 Scudd., Bost. journ. nat. hist., vii, 417 (1862)—Platamodes.
 Sauss., Orth. Amér. moy., 84 (1864).
nortoniana Sauss., Rev. mag. zool., 1862, 169 (1862).
 Northern U. S. and Canada, east of Rocky Mts.
uhleriana Sauss., Rev. mag. zool., 1862, 169 (1862).
 Pennsylvania and Georgia to New Mexico.

- unicolor** Scudd., Bost. journ. nat. hist., vii, 417 (1862)—Platamodes.
 Brunn., Blatt., 134 (1865).
lithophila Scudd., Bost. journ. nat. hist., vii, 418 (1862)—Ectobia.
 U. S. east of great Plains.

BLATTA Linné.

- germanica** Linn., Syst. nat., ed. xii, ii, 688 (1767).
 Westw., Intr. class. ins., i, 515, fig. 51 (1838)—Ectobia.
 Serv., Orth., 107 (1839)—Phyllodromia.
 ? *asiatica* Pall., Reise, iii, 263 (1776).
bivittata Serv., Orth., 108-109 (1839)—Blatta (Phyllodromia).
 Thom., Proc. Dav. acad. nat. sc., i, 250, pl. 36, figs. 1, 2 (1876)
 —Ischnoptera.
 Introduced: Everywhere.

PHYLLODROMIA Serville.

- borealis** Sauss., Rev. mag. zool., 1862, 166 (1862)—Blatta.
 Brunn., Blatt., 101 (1865).
 Brunn., Ibid., 413 (1865)—Ectobia.
 Sauss., Miss. scient. Mex., zool., vi, 42 (1870)—Blatta (Phyllodromia).
marginata Scudd., Rep. U. S. geol. surv. Nebr., 251 (1871)—Tem-
 nopteryx.
 New York, New Jersey, Nebraska.

CERATINOPTERA Brunner.

- lutea** Sauss.-Zehntn., Biol. centr. amer., Orth., 48-49 (1893).
 Gulf States.

TEMNOPTERYX Brunner.

- major** Sauss.-Zehntn., Biol. centr. amer., Orth., 54 (1893).
 Tennessee.
texensis Sauss.-Zehntn., Biol. centr. amer., Orth., 52, pl. 3, fig. 31
 (1893).
 Texas, New Mexico.
virginica Brunn., Blatt., 86 (1865).
 New York and Virginia to Nebraska.

LOBOPTERA Brunner.

- americana** Scudd. (See Appendix.)
 Arizona.

NYCTOBORINAE.

NYCTOBORA Burmeister.

holosericea Klug, Burm., Handb. ent., ii, 502 (1839).

New York, Minnesota.

mexicana Sauss., Rev. mag. zool., 1862, 227 (1862).

Nebraska.

sericea Burm., Handb. ent., ii, 501 (1838).

aegyptiaca Drury (nec Linn.), Ill., ii, 71, pl. 36, fig. 3 (1773)—Blatta.

druryi Serv., Orth., 86 (1839)—Blatta.

Introduced: Massachusetts.

PERIPLANETINAE.

EURYCOTIS Stål.

ingens Scudd., Proc. Bost. soc. nat. hist., xix, 92 (1877)—Platyzosteria.

Scudd., Psyche, ii, 154 (1878).

Florida.

sabaliana Scudd., Proc. soc. nat. hist., xix, 93 (1877)—Platyzosteria.

Florida.

PELMATOSILPHA Dohrn.

rotundata Scudd. (See Appendix.)

Texas.

STYLOPYGA Fischer de Waldheim.

orientalis Linn., Syst. nat., ed. x, i, 434 (1758)—Blatta.

Burm., Handb. ent., ii, 504 (1839)—Periplaneta.

Serv., Orth., 72 (1839)—Kakkerlac.

Blanch., Hist. nat. ins., iii, 6 (1840)—Blatta (Kakkerlac).

Fisch. Wald., Orth. russ., 70, pl. 24, fig. 1, 2 (1846-1849).

Sauss., Orth. Amér. moy., 73 (1864)—Periplaneta (Stylopyga).

Caulf., Rep. ent. soc. Ont., xviii, 68 (1886)—Blatta (Stylopyga).

culinaris DeGeer, Mém., iii, 344, pl. 25, figs. 1-7 (1773)—Blatta.

Cosmopolitan, especially by seaboard.

PERIPLANETA Burmeister.

americana Linn., Syst. nat., ed. x, i, 434 (1758)—Blatta.

Serv., Ann. sc. nat., xx, 39 (1831)—Kakkerlac.

Burm., Handb. ent., ii, 503 (1838).

Blanch., Hist. nat. ins., iii, 6 (1840)—Blatta (Kakkerlac).

PERIPLANETA (Continued).

- Guér., Sagra, Hist. nat. Cuba, 339 (1859)—*Blatta* (*Periplaneta*).
 Sauss., Orth. Amér. moy., 71 (1864)—*Periplaneta* (*Cacerlaca*).
lata Herbst, Fuessl. Arch., iv, 185, pl. 54, fig. 5 (1786)—*Blatta*.
kakerlac Oliv., Encycl. méth., 315 (1789)—*Blatta*.
siccifolia Stoll', Repr. Blattes, pl. 3d, fig. 10, 11 (1813)—*Blatta*.
aurantiaca Stoll', Ibid., pl. 3d, fig. 14 (1813)—*Blatta*.
brunnea Klug, Burm., Handb. ent., ii, 503 (1838).
 Cosmopolitan.
- australasiae** Fabr., Syst. ent., 271 (1775)—*Blatta*.
 Burm., Handb. ent., ii, 503 (1838).
 Guér., Sagra, Hist. nat. Cuba, 340 (1857)—*Blatta* (*Periplaneta*).
 Sauss., Orth. Amér. moy., 72 (1864)—*Periplaneta* (*Cacerlaca*).
domingensis Palis., Ins. Afr. Amér., 182, pl. 1b, fig. 4 (1818)—*Blatta*.
zonata Hagenb., Haan, Bijdr. kenn. Orth., 49 (1842).
 Florida, Nebraska, Minnesota.

PANCHLORINAE.

PANCHLORA Burmeister.

- poeyi** Sauss., Rev. mag. zool., 1862, 230 (1862).
nivea Herbst (nec Linn.), Fuessl., Arch., 1786, 185, pl. 49, fig. 8
 (1786)—*Blatta*.
viridis Burm. (nec Fabr.), Handb. ent., ii, 506 (1838).
 Atlantic Coast.

PYCNOSCELUS Scudder.

- surinamensis** Linn., Syst. nat., ed. xii, 687 (1767)—*Blatta*.
 Burm., Handb. ent., ii, 507 (1838)—*Panchlora*.
 Guér., Sagra, Hist. nat. Cuba, 342 (1857)—*Blatta* (*Panchlora*).
 Brunn., Blatt., 278-280, pl. 7, fig. 32 (1865)—*Panchlora* (*Leuco-
 phaea*).
 Brunn.-Redt., Proc. zool. soc. Lond., 1892, 205 (1892)—*Leuco-
 phaea*.
indica Fabr., Ent. syst., ii, 8 (1792)—*Blatta*.
melanocephala Stoll', Repr. Blattes, pl. 4d, fig. 20 (1813)—*Blatta*.
 ? *corticum* Serv., Orth., 90 (1839)—*Blatta*.
obscurus Scudd., Bost. journ. nat. hist., vii, 424 (1862).
 Gulf and southern Atlantic States.

CORYDINAE.

HOMEOGAMIA Burmeister.

bolliana Sauss., Rev. suisse zool., i, 296 (1893).
Texas, New Mexico.

PLECTOPTERINAE.

CHORISONEURA Brunner.

texensis Biol. centr. amer., Orth., 80 (1893).
Texas, New Mexico.

PERISPHAERINAE.

HORMETICA Burmeister.

advena Scudd. (See Appendix.)
Introduced: Massachusetts.

PANESTHINAE.

CRYPTOCERCUS Scudder.

punctulatus Scudd., Bost. journ. nat. hist., vii, 420 (1862).
Brunn., Blatt., 389 (1865)—Dasyposoma.
Virginia, California.

MANTIDAE.

MANTINAE.

YERSINIA Saussure.

solitaria Scudd., Can. ent., xxviii, 209 (1896).
Colorado, Nebraska.

LITANEUTRIA Saussure.

borealis Brun., Publ. Nebr. acad. sc., iii, 22 (1893)—Ameles.
Scudd., Can. ent., xxviii, 209 (1896).
Nebraska.

minor Scudd., Rep. U.S. geol. surv. Nebr., 251 (1871)—Stagmatoptera.
Sauss., Mant. amér., 54 (1871)—Stagmomantis.
Scudd., Can. ent., xxviii, 209 (1896).
Nebraska to Texas.

obscura Scudd., Can. ent., xxviii, 209-210 (1896).
Arizona, California.

pacifica Scudd., Can. ent., xxxviii, 210 (1896).
California.

TENODERA Burmeister.

sinensis Sauss., Ent. news, ix, 144-145, pl. 9 (1898).

aridifolia var. *sinensis* Sauss., Mel. orth., i, 419, pl. 7, fig. 62 (1871).

Introduced: Pennsylvania.

PHASMOMANTIS Saussure.

sumichrasti Sauss., Rev. mag. zool., 1861, 126 (1861)—Mantis (Car dioptera).

Sauss., Mitth. schweiz. ent. ges., iii, 69 (1869).

mexicana Sauss., Rev. mag. zool., 1861, 127 (1861).

Texas.

CALLIMANTIS Stål.

floridana Scudd., Can. ent., xxviii, 210 (1896).

Florida.

STAGMOMANTIS Saussure.

carolina Linn., Cent. ins. rar., 13 (1763)—Gryllus (Mantis).

Linn., Syst. nat., ed. xii, ii, 691 (1767)—Mantis.

Burm., Handb. ent., ii, 538 (1838)—Mantis (Stagmatoptera).

Sauss., Mitth. schweiz. ent. ges., iii, 65 (1869).

Ril., Stand. nat. hist., ii, 173-174, fig. 249, 250 (1884)—Phas momantis).

How., Proc. ent. soc. Wash., ii, 251-252 (1892)—Mantis (Stag momantis).

irrorata Linn., Cent. ins. rar., 14 (1763)—Gryllus (Mantis).

cuticularis Serv., Orth., 189-190 (1839)—Mantis.

conspurcata Serv., Ibid., 190 (1839)—Mantis.

inquinata Serv., Ibid., 191 (1839)—Mantis.

ferox Sauss., Rev. mag. zool., 1859, 60 (1859)—Mantis (Stigmatop tera).

tolteca Sauss., Ibid., 1861, 127 (1861)—Mantis (Stagmatoptera).

stollii Sauss., Mitth. schweiz. ges., iii, 65 (1869).

dimidiata Sauss., Mant. amér., 48-50 (1871).

wheeleri Thom., Rep. U. S. geol. surv. west 100 mer., v, 849 (1875)—Mantis.

Southern U. S.

limbata Hahn, Icon. Orth., pl. A, gen. Mantis, fig. 2 (1836)—Mantis.

Sauss., Miss. scient. Mex., Rech. zool, vi, 249-251, pl. 6, fig. 11, 11a (1872).

latipennis Burm., Handb. ent., ii, 538 (1838)—Mantis (Stagmatop tera).

viridimargo Burm., Ibid., ii, 532 (1838)—Mantis (Photina).

cellularis Burm., Ibid., ii, 532 (1838)—Mantis (Photina).

azteca Sauss., Rev. mag. zool., 1859, 60 (1859)—Mantis (Stigmatoptera).

Texas to Arizona.

GONATISTA Saussure.

grisea Fabr., Ent. syst., 22 (1793)—Mantis.

Sauss., Mant. amér., 23-25 (1871).

reticulata Thunb., Mém. acad. St. Petersb., v, 288 (1815)—Mantis.

phryganoides Serv., Orth., 198 (1839)—Mantis.

bifasciata De Haan, Bijdr. kenn. Orth., 60, 78 (1842)—Mantis.

cubensis Sauss., Mitth. schweiz. ges., iii, 61 (1869).

Indiana to Florida.

BRUNNERIA Saussure.

borealis Scudd., Can. ent., xxviii, 212 (1896).

Texas.

OLIGONYX Saussure.

scudderi Sauss., Mitth. schweiz. ent. ges., iii, 239 (1870).

missouriensis Glov., Ill. N. A. ent., Orth., pl. 13, fig. 11 (1872)—Mantis.

bollianus Sauss.-Zehntn., Biol. centr. amer., Orth., 173, pl. 9, fig. 17 (1894).

Southern U. S. east of Rocky Mts.

uhleri Stål, Bih. sv. vet. akad. handl., iv, no. 10, 66 (1877).

Louisiana.

BACTROMANTIS Scudder.

virga Scudd., Can. ent., xxviii, 213 (1896).

?*baculina* Bates, Westw., Rev. Mant., 5 (1889) undescr.—Thesprotia-Florida.

THESPROTIA Stål.

graminis Scudd., Proc. Bost. soc. nat. hist., xix, 90 (1877)—Oligonyx.

Scudd., Can. ent., xxviii, 213, 214 (1896).

Georgia, Florida.

VATINAE.

THEOCLYTES Serville.

chlorophaea Blanch., Guér., Mag. zool., v, 135 (1835)—Mantis.

Serv., Orth., 153 (1839).

- Blanch., Hist. nat. ins., iii, 2, pl. 3, fig. 1 (1840)—*Empusa*.
 Westw., Rev. Mant., 24 (1889)—*Pseudovates*.
azteca Sauss., Rev. mag. zool., 1859, 61 (1859).
mexicana Sauss., Ibid., 1861, 127 (1861).
 Gulf States; accidental in New York.

PHASMIDAE.

BACUNCULINAE.

DIAPHEROMERA Gray.

- denticrus** Stål, Rec. Orth., iii, 76 (1875).
 Louisiana, Texas.
femorata Say, Exp. Long, ii, 297 (1824)—Spectrum.
 Harr., Treat. ins. inj. veg., 119 (1841).
 Haan, Bijdr. kenn. Orth., 101, 134 (1842)—*Phasma* (Bacteria).
 Uhl., Harr., Ins. inj. veg., 3 ed., 146 (1862)—*Bacunculus*.
sayi Gray, Syn. Phasm., 18 (1835).
linearis Gosse, Alab., 275 (1859)—Bacteria.
 Northern U. S. and Canada east of Rocky Mts.
veliei Walsh [*velii*], Proc. ent. soc. Philad., iii, 410 (1864).
 Nebraska.

SERMYLE Stål.

- strigata** Scudd. (See Appendix.)
 Texas.

BACUNCULUS Burmeister.

- tenuescens** Scudd. (See Appendix.)
 Florida.

ANISOMORPHINAE.

ANISOMORPHA Gray.

- bivittata** Say, Amer. ent., iii., pl. 38 (1828)—Spectrum.
 Harr., Treat. ins. inj. veg., 119 (1841)—*Diapheromera*.
 Scudd., Can. ent., xxvii, 30 (1895).
vittata Jaeg., N. Amer. ins., 173 (1854)—Spectrum.
 Southern U. S.
buprestoides Stoll', Repr. spectr., 68, pl. 23, fig. 87, (1787-1813)—
Phasma.
 Gray, Syn. Phasm., 19 (1835).

Haan, Bijdr. kenn. Orth., 101 (1842)—*Phasma* (Anisomorpha).
Southern U. S.

ferruginea Palis., Ins. Afr. Amér., 166, pl. 14, figs. 6, 7 (1805-1821)—*Phasma*.

Gray, Syn. Phasm., 18 (1835).

Haan, Bijdr. kenn. Orth., 101 (1842)—*Phasma* (Anisomorpha).
Southern U. S.

TIMEMA Scudder.

californicum Scudd., Can. ent., xxvii, 30 (1895).
California.

BACILLINAE.

BACILLUS Latreille.

carinatus Scudd., Psyche, vi, 372 (1893).
Arizona.

coloradus Scudd., Psyche, vi, 372 (1893).
Colorado.

ACRIDIIDAE.

TETTIGINAE.

Tettigiae.

NOMOTETTIX Morse.

acuminatus Hanc., Ent. news, x, 8 (1899).
Kansas.

compressus Morse, Journ. N. Y. ent. soc., iii, 15 (1895).
N. Carolina.

cristatus Scudd., Bost. journ. nat. hist., vii, 478 (1862)—*Batrachidea*.

Pack., Rep. nat. hist. Me., 1861, 375 (1862)—*Tetrix*.

Bol., Ann. soc. ent. Belg., xxxi, 260-261 (1887)—*Tettix*.

Morse, Psyche, vii, 150-152, pl. 6, fig. 1a-d (1894).

carinatus Scudd., Bost. journ. nat. hist., vii, 479 (1862)—*Batrachidea*.
Eastern U. S.

parvus Morse, Journ. N. Y. ent. soc., iii, 14-15 (1895).
Minnesota.

NEOTETTIX Hancock.

bolivari Hanc., Ent. news, ix., 139-140, pl. 8, fig. 2, 2a-d (1898).

femoratus Bol. (nec Scudd.), Ann. soc. ent. Belg., xxxi, 264 (1887)
—*Tettix*.

Southern states.

NEOTETTIX (Continued).

bolteri Hanc., Ent. news, ix, 139, 140, pl. 8, fig. 1, 1a-e (1898).

Florida.

femoratus Scudd., Trans. amer. ent. soc., ii, 306 (1869)—Tettix.

Hanc., Ent. news, ix, 139, 140-141 (1898).

Southern and western States.

rotundifrons Hanc., Ent. news, ix, 139, pl. 8, fig. 3, 3a-d (1898).

Florida.

TETTIX Charpentier.

acadicus Scudd., Daws., Rep. geol. 49 par., 345 (1875)—Tettigidea.

Scudd., Ann. rep. chief eng., 1876, 515 (1876).

Canada.

angustus Hanc., Trans. amer. ent. soc., xxiii, 238, pl. 6, fig. 4, 4a, pl.

9, fig. 24 (1896).

Illinois.

arenosus Burm., Handb. ent., ii, 659 (1838)—Tetrix.

Haan, Bijdr. kenn. Orth., 167 (1842)—Acridium (Tetrix).

Walk, Cat. Derm. salt. Brit. mus., v, 813 (1871).

Southern and western states.

brunneri Bol., Ann. soc. ent. Belg., xxxi, 266-267, pl. 2, fig. 22, 22a (1887).

Hudson Bay.

crassus Morse, Journ. N. Y. ent. soc., vii, 201 (1899).

Colorado.

decoratus Hanc., Trans. amer. ent. soc., xxiii, 240-241, pl. 7, fig. 7,

7a, pl. 9, fig. 31 (1896).

Illinois.

fluctuosus Hanc., Trans. amer. ent. soc., xxiii, 240, pl. 7, fig. 6, 6a

(1896).

Illinois.

gibbosus Hanc., Trans. amer. ent. soc., xxiii, 239-240, pl. 6, fig. 5,

5a, pl. 8, fig. 14-19, pl. 9, fig. 30, 31a (1896).

Illinois.

granulatus Kirb., Faun. bor. amer., iv, 251 (1837)—Acridium.

Scudd., Can. nat., vii, 288 (1862).

ornatus Harr. (nec Say), Ins. inj. veg., 150 (1841)—Tetrix.

Eastern and northern N. America.

hancocki Morse, Journ. N. Y. ent. soc., vii, 200-201 (1899).

Montreal to S. Dakota and Nebraska.

- incurvatus** Hanc., Amer. nat., xxix, 761-762, fig. 1 (1895).
Washington.
- inflatus** Hanc., Trans. amer. ent. soc., xxxii, 238, pl. 7, fig. 8, pl. 9,
fig. 26 (1896).
Illinois.
- luggeri** Hanc., Lugg., Orth. Minn., 109 (1898).
Minnesota.
- obscurus** Hanc., Trans. amer. ent. soc., xxiii, 239, pl. 7, fig. 9, 9a, 10,
10a, pl. 9, fig. 23, 25 (1896).
Western States.
- ornatus** Say, Amer. ent., pl. 5 (1824)—*Acridium*.
Harr., Cat. ins. Mass., 57 (1835)—*Tetrix*.
Scudd., Bost. journ. nat. hist., vii, 474 (1862).
dorsalis Harr., Ins. inj. veg., 151 (1841)—*Tetrix*.
bilineatus Harr., Ibid., 151 (1841)—*Tetrix*.
quadrimaculatus Harr., Ibid., 151 (1841)—*Tetrix*.
sordidus Harr., Ibid., 151 (1841)—*Tetrix*.
triangularis Scudd., Bost. journ. nat. hist., vii, 475 (1862).
Northern and eastern N. America.
- oxycephalus** Burm., Handb. ent., ii, 659 (1838)—*Tetrix*.
Haan, Bijdr. kenn. Orth., 143 (1842)—*Acridium* (*Tetrix*).
Walk., Cat. Derm. salt. Brit. mus., v, 813 (1871).
S. Carolina.
- tentatus** Morse, Journ. N. Y. ent. soc., vii, 200 (1899).
Alberta and Wyoming to Oregon and California.

PARATETTIX Bolivar.

- cucullatus** Burm., Handb. ent., ii, 658-659 (1838)—*Tetrix*.
Haan, Bijdr. kenn. Orth., 143 (1842)—*Acridium* (*Tetrix*).
Scudd., Bost. journ. nat. hist., vii, 475 (1862)—*Tettix*.
Morse, Psyche, vii, 163-164, pl. 6, fig. 4, 4a (1894).
Eastern N. America.
- hesperus** Morse, Journ. N. Y. ent. soc., vii, 198 (1899).
Oregon, California.
- mexicanus** Sauss., Rev. mag. zool., 1861, 400 (1861)—*Tettix*.
Bol., Ann. soc. ent. Belg., xxxi, 275 (1887).
Southern States.

PARATETTIX (Continued).

- rugosus** Scudd., Bost. jour. nat. hist., vii, 476 (1862)—Tettix.
 Bol., Ann. soc. ent. Belg., xxxi, 273-274 (1887).
 Florida, Nebraska.
- toltecus** Sauss., Rev. mag. zool., 1861, 401 (1861)—Tettix.
 Bol., Ann. soc. ent. Belg., 31, 273 (1887).
 Southwestern States, California.

Batrachideae.

PAXILLA Bolivar.

- obesa** Scudd., Proc. Bost. soc. nat. hist., xix, 34 (1877)—Tettigidea.
 Bol., Ann. soc. ent. Belg., xxxi, 294-295 (1887).
 Georgia.

TETTIGIDEA Scudder.

- acuta** Morse, Journ. N. Y. ent. soc., iii, 15-16 (1895).
 New York.
- apiculata** Morse, Journ. N. Y. ent. soc., iii, 16 (1895).
 Louisiana.
- armata** Morse, Journ. N. Y. ent. soc., iii, 107 (1895).
 Southern States.
- lateralis** Say, Amer. ent., pl. 5 (1824)—Acridium.
 Harr., Hitchc. Rep. geol. Mass., 583 (1833)—Tetrix.
 Scudd., Bost. jour. nat. hist., vii, 477 (1862).
 Walk., Cat. Derm. salt. Brit. mus., v, 813 (1871).
polymorpha Burm., Handb. ent., ii, 659 (1838)—Tetrix.
 Southern U. S., east of Rocky Mts.
- parvipennis** Harr., Ins. inj. veg., 152 (1841)—Tetrix.
 Walk., Cat. Derm. salt. Brit. mus., v, 814 (1871)—Tettix.
 Morse, Journ. N. Y. ent. soc., iii, 108-109 (1895).
 Northern U. S., east of Rocky Mts.
- prorsa** Scudd., Proc. Bost. soc. nat. hist., xix, 34 (1877).
 Georgia.
- spicata** Morse, Journ. N. Y. ent. soc., iii, 108 (1895).
 Southeastern States.

MASTACINAE.

MORSEA Scudder.

- californica** Scudd., Psyche, viii, 179 (1898).
 California.

TRYXALINAE.

Hyalopteriges.

RHADINOTATUM McNeill.

brevipenne Thom., Rep. U.S. geol. surv. terr., v, 58, pl. fig. 12 (1873)
—Tryxalis.

Scudd., Proc. Bost. soc. nat. hist., xix, 88 (1877)—Achurum.

McNeill, Proc. Dav. acad. nat. sc., vi, 200-201, pl. 1, fig. 1, 1a, 1a
(1897).

Florida.

ACHURUM Saussure.

sumichrasti Sauss., Rev. mag. zool., 1861, 313 (1861)—Tryxalis
(Achurum).

Walk., Cat. Derm. salt. Brit. mus., iii, 518 (1870).

Arizona.

TRYXALIS Fabricius.

brevicornis Linn., Syst. nat., ed. 12, ii, 692 (1767)—Gryllus (Acrida).
Fabr., Syst. ent., 279 (1775)

Walk., Cat. Derm. salt. Brit. mus., iii, 500 (1870)—Pyrgomorpha.

ensicornu De Geer, Mém., iii, 499, pl. 42, fig. 7 (1773)—Acrydium.

notochlora Palis., Ins. Afr. Amér., 80, pl. 3, fig. 3 (1807).

viridula Palis., Ibid., 81, pl. 3, fig. 4 (1807).

punctipennis Serv., Orth., 590 (1839)—Opsomala.

Southern U. S.

Mermiriae.

MERMIRIA Stål.

alacris Scudd., Proc. Bost. soc. nat. hist., xix, 30 (1877).

Southern states.

bivittata Serv., Orth., 589 (1839)—Opsomala.

Haan, Bijdr. kenn. Orth., 144 (1842)—Acridium (Opsomala).

Scudd., Proc. Bost. soc. nat. hist., xix, 30 (1877).

maculipennis Brun., Proc. U. S. nat. mus., xii, 54-55 (1890).

U. S., east of Rocky Mts.

intertexta Scudd., Proc. amer. acad. arts sc., xxxv, 41, 42-43 (1899).

Southern U. S.

neomexicana Thom., Proc. acad. nat. sc. Philad., 1870, 77 (1870)—
Opomala.

MERMIRIA (Continued).

Scudd., Bull. U. S. geol. surv. terr., ii, 262 (1876).

belfragei Stål, Rec. Orth., i, 102 (1873).

Rocky Mts. to Mississippi River.

rostrata McNeill, Proc. Dav. acad. nat. sc., vi, 205, 207-208, pl. 1,
fig. 3c (1897).

Indian Terr.

texana Brun., Proc. U. S. nat. mus., xii, 53-54, pl. 1, fig. 11 (1890).
Southwestern U. S.

vigilans Scudd., Proc. amer. acad. arts sc., xxxv, 42, 43-44 (1899).
N. Carolina.

SYRBULA Stål.

acuticornis Brun., Proc. U. S. nat. mus., xii, 55 (1890).
Texas Arizona.

admirabilis Uhl., Proc. ent. soc. Philad., ii, 553 (1864)—*Stenobothrus*.
Thom., Rep. ent. Ill., ix, 88, 93, 100-102 (1880).

?*montezuma* Sauss., Rev. mag. zool., 1861, 316 (1861)—*Oxycoryphus*.
leucocerca Stål, Rec. Orth., i, 102 (1873).

U. S. east of Rocky Mts. to Atlantic.

fuscovittata Thom., Rep. U. S. geol. surv. west 100 mer., v, 870, pl.
45, fig. 7 (1875).
Arizona.

Acrolophiti.

ACROLOPHITUS Thomas.

hirtipes Say, Amer. ent., iii, pl. 34 (1828)—*Gryllus*.

Thom., Ann. rep. U. S. geol. surv. terr., ii, 266, 278 (1871).

Rocky Mt. region.

ACROCARA Scudder.

pulchellum Brun., Proc. U. S. nat. mus., xii, 60-61, pl. 1, fig. 10 (1890)
—*Pedioscirtetes*.

Scudd., Psyche, v, 437 (1890).

Idaho.

PEDIOSCIRTETES Thomas.

nevadensis Thom., Proc. acad. nat. sc. Philad., 1873, 295 (1873).
Nevada.

GYMNES Scudder.

punctatus Scudd., *Psyche*, v, 440-441 (1890).

California.

Boottettiges.

BOOTTETIX Bruner.

argentatus Brun., *Proc. U. S. nat. mus.*, xii, 58-60, pl. 1, fig. 4, 5 (1890).

Texas, New Mexico.

Amblytropidia.

ERITETIX Bruner.

carinatus Scudd., *Proc. Bost. soc. nat. hist.*, xvii, 511 (1875)—*Gomphocerus*.McNeill, *Proc. Dav. acad. nat. sc.*, vi, 218, 219 (1897).

Middle states.

navicula Scudd., *Ann. rep. chief eng.*, 1876, 506 (1876)—*Gomphocerus*.McNeill, *Proc. Dav. acad. nat. sc.*, vi, 218, 220 (1897).

Plains east of Rocky Mts.

simplex Scudd., *Trans. amer. ent. soc.*, ii, 305 (1869)—*Gomphocerus*.McNeill, *Proc. Dav. acad. nat. sc.*, vi, 218, 219-220 (1897).

Delaware, Maryland.

tricarinatus Thom., *Rep. U. S. geol. surv. terr.*, v, 84 (1873)—*Stenobothrus*.Brun., *Publ. Nebr. acad. sc.*, iii, 22 (1893).

Northwestern states east of Rocky Mts.

variabilis Brun., *Proc. U. S. nat. mus.*, xii, 56 (1890).

N. Mexico.

virgatus Scudd., *Proc. Bost. soc. nat. hist.*, xvii, 511 (1875)—*Gomphocerus*.McNeill, *Proc. Dav. acad. nat. sc.*, vi, 218-219, pl. 2, fig. 9, 9ab (1897).*vernalis* Brun., *Publ. Nebr. acad. sc.*, iii, 22 (1893).

Nebraska to Texas.

MESOCHLOA Scudder.

abortiva Brun., *Proc. U. S. nat. mus.*, xii, 56-57, pl. 1, fig. 8, 9 (1890)—*Eritettix*.Scudd., *Psyche*, viii, 239 (1898).

Texas.

MACNEILLIA Scudder.

obscura Scudd., Proc. Bost. soc. nat. hist., xix, 88 (1877)—Chrys-
ochraon.

McNeill, Proc. Dav. acad. nat. sc., vi, 216, pl. 2, fig. 8, 8ab (1897)
Pedeticum.

Scudd., Psyche, viii, 239 (1898).
Florida.

ACENTETUS McNeill.

carinatus Scudd., Proc. amer. acad. arts sc., xxxv, 45 (1899).
Colorado.

unicolor McNeill, Proc. Dav. acad. nat. sc., vi, 225-226, pl. 3, fig. 12,
12ab (1897).
Colorado.

AMPHITORNUS McNeill.

bicolor Thom., Ann. rep. U. S. geol. surv. terr., v, 465 (1872)—Steno-
bothrus.

McNeill, Proc. Dav. acad. nat. sc., vi, 224-225, pl. 3, fig. 11, 11ab
(1897).

coloradus Thom., Rep. U. S. geol. surv. terr., v, 82 (1873)—Steno-
bothrus.

Montana to Kansas.

ornatus McNeill, Proc. Dav. acad. nat. sc. vi, 224, 225 (1897).
California.

OPEIA McNeill.

obscura Thom., Ann. rep. U. S. geol. surv. terr., v, 466 (1871)—
Oxycoryphus.

McNeill, Proc. Dav. acad. nat. sc., vi, 215-216, pl. 2, fig. 7, 7a-c
(1897).

Plains east of Rocky Mts.

testacea Scudd., Proc. amer. acad. arts sc., xxxv, 45-46 (1899).
California.

AMBLYTROPIDIA Stål.

occidentalis Sauss., Rev. mag. zool., 1861, 317 (1861)—Stenoboth-
rus (Rhammatocerus).

Walk., Cat. Derm. salt. Brit. mus., iv, 755, 756 (1870)—Steno-
bothrus.

McNeill, Proc. Dav. acad. nat. sc., vi, 226, 227, pl. 3, fig. 13, 13ab
(1897).

subhyalina Scudd., Proc. Bost. soc. nat. hist., xvii, 511 (1875).

Prov., Faune ent. Can., ii, 44 (1877)—*Chloealtis* (*Amblytropidia*).
Southern U. S.

Phlibostromae.

ALPHA Brunner.

cinerea Brun., Proc. U. S. nat. mus., xii, 52-53 (1890)—*Ochrilidea*.

McNeill, Proc. Dav. acad. nat. sc., vi, 246, 247 (1897).

Plains east of Rocky Mts.

crenulata Brun., Proc. U. S. nat. mus., 51-52 (1890)—*Ochrilidea*.

McNeill, Proc. Dav. acad. nat. sc., vi, 246, 247 (1897).

Rocky Mt. region.

occipitalis Thom., Rep. U. S. geol. surv. terr., v, 81 (1873)—*Stenobothrus*.

Thom., Proc. Dav. acad. nat. sc., i, 251 (1876)—*Oxycoryphus*.

Brun., Publ. Nebr. acad. sc., iii, 22 (1893)—*Ochrilidea*.

Brunn., Rev. syst. Orth., 121 (1893).

Plains east of Rocky Mts., Arizona.

PHLIBOSTROMA Scudder.

quadrимaculatum Thom., Ann. rep. U. S. geol. surv. terr., ii, 266, 280 (1871)—*Stenobothrus*.

Brun., Bull. Washb. coll., i, 135 (1885).

pictum Scudd., Proc. Bost. soc. nat. hist., xvii, 517 (1875).

parvum Scudd., Ann. rep. chief eng., 1876, 510 (1876).

lactum Uhl., Bull. U. S. geol. surv. terr., iii, 792-793 (1877)—*Stenobothrus*.

Rocky Mts. and plains to eastward.

Orphulae.

ORPHULELLA Giglio-Tos.

affinis Scudd., Can. ent., xxxi, 178, 183 (1899).

?*tepanica* McNeill (nec Sauss.), Proc. Dav. acad. nat. sc., vi, 242-243, pl. 4, fig. 17a (1897)—*Orphula*.

California.

compta Scudd., Can. ent., xxxi, 178, 180-181 (1899).

California, Arizona.

decora McNeill, Proc. Dav. acad. nat. sc., vi, 239-240, pl. 4, fig. 17d (1897)—*Orphula*.

ORPHULELLA (Continued).

Scudd., Can. ent., xxxi, 178, 181 (1899).

Texas to Colorado.

descreta Scudd., Can. ent., xxxi, 178, 184-185 (1899).

Utah.

obliquata Scudd., Can. ent., xxxi, 178, 181-182 (1899).

Texas to Colorado.

olivacea Morse, Psyche, vi, 477-478, figs. 1, 2 (1893)—*Stenobothrus*.

Morse, Ibid., vii, 327, 411, pl. 7, fig. 10, 10a (1896)—*Orphula*.

Gigl.-Tos, Boll. mus. zool. Tor., xii, no. 301, 2 (1897)—*Orphula* (*Orphulella*).

Scudd., Can. ent., xxxi, 179, 187 (1899).

Atlantic States.

pelidna Burm., Handb. ent., ii, 650 (1838)—*Gomphocerus*.

Thom., Rep. U. S. geol. surv. terr., v, 95 (1873)—*Stenobothrus*.

McNeill, Proc. Dav. acad. nat. sc., vi, 235-239 (1897)—*Orphula*.

Scudd., Can. ent., xxxi, 179, 187 (1899).

maculipennis Scudd., Bost. journ. nat. hist., vii, 458-459 (1862)—*Stenobothrus*.

propinquans Scudd., Ibid., vii, 461 (1862)—*Stenobothrus*.

Massachusetts to California and Florida.

picturata Scudd., Can. ent., xxxi, 178, 182 (1899).

Texas.

pratorum Scudd., Can. ent., xxxi, 179, 186 (1899).

Southern U. S.

salina Scudd., Can. ent., xxxi, 179, 185-186 (1899).

Colorado, Utah.

speciosa Scudd., Bost. journ. nat. hist., vii, 458 (1862)—*Stenobothrus*.

McNeill, Proc. Dav. acad. nat. sc., vi, 240-242, pl. 4, fig. 17c (1879)—*Orphula*.

Scudd., Can. ent., xxxi, 178, 183-184 (1899).

aequalis Scudd., Bost. journ. nat. hist., vii, 459-460 (1862)—*Stenobothrus*.

bilineata Scudd., Ibid., vii, 460-461 (1862)—*Stenobothrus*.

gracilis Scudd., Rep. U. S. geol. surv. Nebr., 250 (1871)—*Stenobothrus*.

Nova Scotia to Texas.

tepaneca Sauss., Rev. mag. zool., 1861, 319 (1861)—*Stenobothrus* (*Rhammatocerus*).

Walk., Cat. Derm. salt. Brit. Mus., iv, 756 (1870)—*Stenobothrus*.
 Scudd., Can. ent., xxxi, 177 (1899).

Texas.

DICHROMORPHA Morse.

brunnea Scudd., Proc. Bost. soc. nat. hist., xvii, 510 (1875)—*Chloealtis*.

McNeill, Proc. Dav. acad. nat. sc., vi, 231, 232, pl. 3, fig. 15, 15ab (1897).

Southern U. S.

viridis Scudd., Bost. journ. nat. hist., vii, 455 (1862)—*Chloealtis*.

Walk., Cat. Derm. salt. Brit. mus., iv, 755 (1870)—*Stenobothrus*.

Scudd., Hitchc., Rep. geol. N. H., i, 372 (1874)—*Chrysochraon*.

Thom., Bull. Ill. mus. nat. hist., i, 61 (1876)—*Tryxalis*.

Morse, Psyche, vii, 326, 383-384, pl. 7, fig. 7, 7ab (1896).

punctulata Scudd., Bost. journ. nat. hist., vii, 455 (1862)—*Chloealtis*.

brevipennis Thom., Trans. Ill. st. agric. soc., v, 451 (1865)—*Opomala*.

augusticornis Stål., Rec. Orth., i, 105 (1873)—*Tryxalis*.

U. S. east of Rocky Mts.

CLINOCEPHALUS Morse.

elegans Morse, Psyche, vii, 326, 402, pl. 7, fig. B, Ba (1896).

Atlantic States.

CHLOEALTIS Harris.

abdominalis Thom., Rep. U. S. geol. surv. terr., v, 74 (1874)—*Chrysochraon*.

Brun., Can. ent., xvii, 10 (1885).

Northern States west of Mississippi River.

conspersa Harr., Ins. inj. veg., 149 (1841)—*Locusta* (*Chloealtis*).

Scudd., Can. nat., vii., 286 (1862).

Walk., Cat. Derm. salt. Brit. mus., iv, 755 (1870)—*Stenobothrus*.

Thom., Rep. U. S. geol. surv. terr., v, 76 (1874)—*Chrysochraon*.

Thom., Bull. Ill. mus. nat. hist., i, 61 (1876)—*Tryxalis*.

abortiva Harr., Ins. inj. veg., 149 (1841)—*Locusta* (*Chloealtis*).

Northern U. S. and Canada east of Great Plains.

Stenobothri.

NAPAIA McNeill.

gracilis McNeill, Proc. Dav. acad. nat. sc., vi, 213-214, pl. 2, fig. 6, 6a-d (1897).

alta Scudd., Proc. amer. acad. arts sc., xxxv, 47-48 (1899)—*Oeonomus*.

California.

HORESIDOTES Scudder.

cinereus Scudd., Proc. amer. acad. arts sc., xxxv, 49-50 (1899).
California.

STENOBOTHRUS Fischer.

curtipennis Harr., Cat. ins. Mass., 56 (1835)—*Locusta*.

Harr., In. inj. veg., 149 (1841)—*Locusta* (*Chloealtis*).

Pack., Rep. nat. hist. Me., 1861, 376 (1861)—*Chloealtis*.

Scudd., Can. nat., vii, 286 (1862).

longipennis Scudd., Bost. journ. nat. hist., vii, 457 (1862).

coloradensis McNeill, Proc. Dav. acad. nat. sc., vi, 260, 262-263, pl. 5, fig. 25, 25ab (1897).

Northern U. S. and Canada east of Sierra Nevadas.

oregonensis Scudd., Proc. amer. acad. arts sc., xxxv, 50-51 (1899).
California, Oregon.

PLATYBOTHRUS Scudder.

brunneus Thom., Ann. rep. U. S. geol. surv. terr., ii, 266, 280 (1871)
—*Stenobothrus*.

Caulf., Rep. ent. soc. Ont., xviii, 70 (1888)—*Gomphocerus*.

Scudd., Psyche, viii, 239 (1898).

Nebraska and Colorado to Sierra Nevadas.

sordidus McNeill, Proc. Dav. acad. nat. sc., vi, 260, 263-264, pl. 5, fig. 25c (1897)—*Stenobothrus*.

Idaho.

BRUNERIA McNeill.

shastana Scudd., Rep. U. S. ent. comm., ii, app., 25, pl. 17, fig. 15, 18 (1881)—*Gomphocerus*.

McNeill, Proc. Dav. acad. nat. sc., vi, 265, pl. 5, fig. 26, 26ab (1897)—*Brunneria*. Cf. Psyche, viii, 71.

Scudd., Appal., viii, 306 (1898).

California.

GOMPHOCERUS Thunberg.

carpenterii Thom., Bull. U. S. geol. surv. terr., i, no. 2, ser. 1, 65 (1874).

Thom., Proc. Dav. acad. nat. sc., i, 251 (1876)—*Stenobothrus*.
Mountains of Colorado.

clavatus Thom., Rep. U. S. geol. surv. terr., v, 96 (1873).

Eastern slope of Rocky Mts.

clepsydra Scudd., Daws., Rep. geol. 49 par., 344 (1875).

Eastern slope of Rocky Mts.

Scyllinae.

BOOPEDON Thomas.

auriventris McNeill, Can. ent., xxxi, 54-55 (1899).

Arkansas.

flavofasciatum Thom., Proc. acad. nat. sc. Philad., 1870, 84 (1870).

Plains east of Rocky Mts.

nubilum Say, Journ. acad. nat. sc. Philad., iv, 308 (1825)—*Gryllus*.

Thom., Ann. rep. U. S. geol. surv. terr., ii, 265, 272, 273 (1871).

nigrum Thom., Proc. acad. nat. sc. Philad., 1870, 83 (1870).

Eastern slope of Rocky Mts.

PLECTROTETTIX McNeill.

patriae Scudd. (See Appendix.)

California.

EUPNIGODES McNeill.

megacephala McNeill, Proc. Dav. acad. nat. sc., vi, 267, pl. 6, fig. 28,

28ab (1897)—*Psigodes*. Cf. *Psyche*, viii, 71.

California.

PSOLOESSA Scudder.

buddiana Brun., Proc. U. S. nat. mus., xii, 61-62, pl. 1, fig. 6 (1890).

Texas.

ferruginea Scudd., Proc. Bost. soc. nat. hist., xvii, 513 (1875).

Nebraska, Texas, Arizona.

maculipennis Scudd., Proc. Bost. soc. nat. hist., xvii, 513 (1875).

Texas to California and Nebraska.

texana Scudd., Proc. Bost. soc. nat. hist., xvii, 512 (1875).

McNeill, Proc. Dav. acad. nat. sc., vi, 271, 272, pl. 6, fig. 30c

(1897)—*Stirapleura*.

Texas, California.

STIRAPLEURA Scudder.

decussata Scudd., Ann. rep. chief eng., 1876, 510 (1876).

coloradensis Thom., Proc. Dav. acad. nat. sc., i, 252, pl. 36, fig. 3, 4

(1876)—*Psoloessa*.

Rocky Mt. region.

STIRAPLEURA (Continued).

- delicatula** Scudd., Bull. U.S. geol. surv. terr., ii, 263 (1876)—Scyllina.
McNeill, Proc. Dav. acad. nat. sc., vi, 271, 272 (1897).
Colorado.
- eurotiae** Brun., Proc. U. S. nat. mus., xii, 62-63 (1890)—Psoloessa.
McNeill, Proc. Dav. acad. nat. sc., vi, 271, 272 (1897).
Colorado.
- ornata** Scudd., Ann. rep. chief eng., 1876, 507 (1876)—Doclostaurus.
McNeill, Proc. Dav. acad. nat. sc., vi, 270, 271 (1897).
N. Mexico.
- pusilla** Scudd., Proc. amer. acad. arts sc., xxxv, 52-53 (1899).
New Mexico, California.
- tenuicarina** Scudd., Proc. amer. acad. arts sc., xxxv, 53-54 (1899).
Texas.

AGENEOTETTIX McNeill.

- deorum** Scudd., Bull. U. S. geol. surv. terr., ii, 262 (1876)—Chrys-
ochraon.
McNeill, Proc. Dav. acad. nat. sc., vi, 268-269, pl. 6, fig. 29, 29ab
(1897)—Eremnus. Cf. Psyche, viii, 77.
Colorado.
- scudderi** Brun., Proc. U. S. nat. mus., xii, 63-64 (1890)—Aulocara.
McNeill, Proc. Dav. acad. nat. sc., vi, 268, 269 (1897)—Eremnus.
Cf. Psyche, viii, 77.
parvus McNeill (nec Scudd.), Psyche, vi, 64 (1891)—Philobostroma.
Rocky Mts. to Mississippi River, Illinois, Indiana.

AULOCARA Scudder.

- elliotti** Thom., Proc. acad. nat. sc. Philad., 1870, 82 (1870)—Stauro-
notus.
Sauss., Prodr. Oedip., 79 (1884)—Oedocara.
Brun., Can. ent., xvii, 10 (1885).
coeruleipes Scudd., Bull. U. S. geol. surv. terr., ii, 266 (1876).
decens Scudd., Ibid., ii, 267 (1876).
strangulatum Scudd., Ann. rep. U. S. geol. surv. west 100 mer., 1876,
289 (1876)—Oedocara.
Texas, Colorado and Wyoming to the Pacific.
- femoratum** Scudd., Proc. amer. acad. arts sc., xxxv, 54, 55-56 (1899).
Kansas to Utah.

parallelum Scudd., Proc. amer. acad. arts sc., xxxv, 55, 57 (1899).

Utah.

rufum Scudd., Proc. amer. acad. arts sc., xxxv, 54, 55 (1899).

Colorado.

Epacromiae.

LIGUROTETTIX McNeill.

coquilletti McNeill, Proc. Dav. acad. nat. sc. vi, 258-259, pl. 5, fig.

24, 24a-c (1897).

California.

MECOSTETHUS Fieber.

gracilis Scudd. Can. nat., vii, 286 (1862)—Arcyptera.

Thom., Rep. U. S. geol. surv. terr., v, 99 (1873)—Stethophyma.

Morse, Psyche, vii, 327, 444-445, pl. 7, fig. 14 (1896).

Nova Scotia to Dakota.

lineatus Scudd., Bost. journ. nat. hist., vii, 462 (1862)—Arcyptera.

Thom., Rep. U. S. geol. surv. terr., v, 98 (1873)—Stethophyma.

Morse, Psyche, vii, 327, 444-445, pl. 7, fig. 14 (1896).

pvariegatus Walk (nec Stoll'), Cat. Derm. salt. Brit. mus., iv, 781-782 (1870)—Stethophyma.

Northern U. S. east of Rocky Mts.

platypterus Scudd., Bost. journ. nat. hist., vii, 463 (1862)—Arcyptera.

Thom., Rep. U. S. geol. surv. terr., v, 99 (1873)—Stethophyma.

Morse, Psyche, vii, 327, 445, pl. 7, fig. 15, 15ab (1896).

New England.

OEDIPODINAE.

Oedipodini.

ARPHIA Stål.

arcta Scudd., Bull. U. S. geol. surv. terr., ii, 263 (1876).

Colorado, Minnesota.

behrensi Sauss., Prodr. Oedip., 71-72 (1884).

California.

carinata Scudd., Trans. amer. ent. soc., ii, 306 (1869)—Oedipoda.

Thom., Rep. U. S., geol. surv. terr., v, 106 (1873)—Tomonotus.

Uhl., Bull. U. S. geol. surv. terr., iii, 794 (1877).

Western Mississippi Valley.

conspersa Scudd., Proc. Bost. soc. nat. hist., xvii, 514 (1875).

Iowa to Texas.

ARPHIA (continued).

crepusculum Sauss., Prodr. Oedip., 67 (1884).

Texas.

frigida Scudd., Daws., Rep. geol. 49th par., 344 (1875).

Caulf., Can. rec. sc., ii, 400 (1887)—Oedipoda (Arphia).

Alaska to Montana.

granulata Sauss., Prodr. Oedip., 67 (1884).

Florida, Nebraska.

infernalis Sauss., Prodr. Oedip., 70 (1884).

Texas.

luteola Scudd., Proc. Bost. soc. nat. hist., xvii, 515 (1875).

Texas, Colorado, Utah.

ovaticeps Sauss., Add. prodr. Oedip., 165-166 (1888).

tenebrosa Sauss. (nec. Scudd.), Prodr. Oedip., 68-69 (1884).

Colorado.

simplex Scudd., Proc. Bost. soc. nat. hist., xvii, 514 (1875).

Nebraska to Texas.

sulphurea Fabr., Spec. ins., i, 369 (1781)—Gryllus.

Gmel., Linn. syst. nat., i, pt. 4, 2079 (1788)—Gryllus (Locusta).

Oliv., Encycl. méth., vi, 227 (1791)—Acridium.

Harr., Hitchc., Rep. geol. Mass., 583 (1833)—Locusta.

Burm., Handb. ent., ii, 643 (1838)—Oedipoda.

Haan, Bijdr. kenn. Orth., 143 (1842)—Acridium (Oedipoda).

Thom., Rep. U. S. geol. surv. terr., v, 105 (1873)—Tomonotus.

Stål, Rec. Orth., i, 119 (1873).

U. S. and Canada, east of Rocky Mts.

tenebrosa Scudd., Rep. U. S. geol. surv. Nebr., 251 (1871)—Oedipoda.

Thom., Rep. U. S. geol. surv. terr., v, 107 (1873)—Tomonotus.

Scudd., Daws., Rep. geol. 40th par., 344 (1875).

Caulf., Can. rec. sc., ii, 400 (1887)—Oedipoda (Arphia).

pseudonietana Thom., Proc. acad. nat. sc. Philad., 1870, 82 (1870)—Tomonotus.

mexicana Thom. (nec. Sauss.), Ibid., 1870, 82 (1870)—Tomonotus.

sanguinaria Stål, Rec. Orth., i, 119 (1873).

U. S. and Canada west of Mississippi River.

teporata Scudd., Ann. rep. chief eng., 1876, 508 (1876).

Rocky Mt. region, Texas.

- xanthoptera** Germ., *Burm., Handb. ent.*, ii, 643 (1838)—*Oedipoda*.
 Haan, *Bijdr. kenn. Orth.*, 143 (1842)—*Acridium* (*Oedipoda*).
 Thom., *Rep. U. S. geol. surv. terr.*, v, 105 (1873)—*Tomonotus*.
 Scudd., *Hitchc., Rep. geol. N. H.*, i, 377 (1874).
sulphurea Stoll' (nec Fabr.), *Répr. spectr.*, *Saut. pass.*, 13, reg., 12,
 pl. 6b, fig. 17 (1787-1813)—*Gryllus* (*Locusta*).
 U. S. east of Great Plains except southernmost states.

CHORTOPHAGA Saussure.

- brevipennis** Scudd., *Proc. Bost. soc. nat. hist.*, xvii, 483 (1875)—*Tragocephala*.
 Scudd., *Ann. rep. chief eng.*, 1876, 508 (1876)—*Chimarocephala*.
 Sauss., *Prodr. Oedip.*, 73 (1884).
 California.
- viridifasciata** DeGeer, *Mém.*, iii, 498, pl. 42, fig. 6 (1773)—*Acrydium*.
 Goeze, *Ent. beytr.*, ii, 115 (1778)—*Gryllus* (*Locusta*).
 Harr., *Hitchc., Rep. geol. Mass.*, 583 (1833)—*Locusta*.
 Harr., *Ins. inj. veg.*, 147 (1841)—*Locusta* (*Tragocephala*).
 Uhl., *Harr., Ibid.*, 3d ed., 181 (1862)—*Gomphocerus*.
 Scudd., *Bost. journ. nat. hist.*, vii, 461 (1862)—*Tragocephala*.
 Scudd., *Ann. rep. chief eng.*, 1876, 508 (1876)—*Chimarocephala*.
 Sauss., *Prodr. Oedip.*, 72-73, pl., figs. 7, 12 (1884).
virginiana Fabr., *Syst. ent.*, 291 (1775)—*Gryllus*.
chrysomelas Gmel., *Linn. syst. nat.*, i, pt. 4, 2086 (1788)—*Gryllus*
 (*Locusta*).
marginata Oliv., *Encycl. méth.*, vi, 229 (1791)—*Acridium*.
hemiptera Palis., *Ins. Afr. Amér.*, 145, pl. 4, fig. 3 (1817)—*Acridium*.
radiata Harr., *Cat. ins. Mass.*, 56 (1835)—*Locusta*.
infuscata Harr., *Ins. inj. veg.*, 147 (1841)—*Locusta* (*Tragocephala*).
zimmermanni Sauss., *Rev. mag. zool.*, 1861, 320 (1861)—*Tomonotus*.
doranii Gcd., *Ent. amer.*, vi, 13-14 (1890)—*Stethophyma*.
viridis Osb., *Ins. life*, v, 323 (1893)—*Tragocephala*.
 U. S. and Canada, east of Rocky Mts.

CHIMAROCEPHALA Scudder.

- behrensi** Sauss., *Prodr. Oed.*, 75 (1884).
 California.
- pacifica** Thom., *Rep. U. S. geol. surv. terr.*, v, 101 (1873)—*Tragocephala*.
 Scudd., *Ann. rep. chief eng.*, 1876, 508 (1876).
 California.

ENCOPTOLOPHUS Scudder.

costalis Scudd., Bost. journ. nat. hist., vii, 473 (1862)—Oedipoda.

Stål, Rec. Orth., i, 119 (1873)—Tragocephala.

Scudd., Proc. Bost. soc. nat. hist., xvii, 480 (1875).

Texas, New Mexico, Missouri.

pallidus Brun., N. A. fauna, vii, 266 (1893).

California.

parvus Scudd., Proc. Bost. soc. nat. hist., xvii, 480 (1875).

Texas.

sordidus Burm., Handb. ent., ii, 643 (1838)—Oedipoda.

Haan, Bijdr. kenn. Orth., 143 (1842)—Acridium (Oedipoda).

Stål, Rec. Orth., i, 119 (1873)—Tragocephala.

Scudd., Proc. Bost. soc. nat. hist., xvii, 479 (1875).

Prov., Faune ent. Can., ii, 41 (1877)—Oedipoda (Encoptolophus).

Osborne, Bull. div. ent. U. S. dep. agric., xxiii, 59 (1891)—Arphia.

periscelidis Say, Harr., Cat. ins. Mass., 56 (1835)—Locusta [undescribed].

nebulosus Harr., Ins. inj. veg., 146 (1841)—Locusta.

U. S. and Canada east of Great Plains.

CAMNULA Stål.

pellucida Scudd., Bost. journ. nat. hist., vii, 472 (1862)—Oedipoda.

Scudd., Hitchc., Rep. geol. N. H., i, 378 (1874).

Prov., Faune ent. Can., ii, 40 (1877)—Oedipoda (Camnula).

obiona Thom., Ann. rep. U. S. geol. surv. terr., ii, 266, 279 (1871)—

Stenobothrus.

atrox Scudd., Rep. U. S. geol. surv. Nebr., 253 (1872)—Oedipoda.

tricarinata Stål, Rec. Orth., i, 120 (1873).

Northernmost U. S. and Canada from Atlantic to Pacific.

HIPPISCUS Saussure.

(Hippiscus.)

compactus Scudd., Psyche, vi, 268, 288 (1892).

Maryland, N. Carolina.

haldemanii Scudd., Rep. U. S. geol. surv. Nebr., 251 (1871)—Oedipoda.

Scudd., Bull. U. S. geol. surv. terr., ii, 264 (1876).

paradoxus Glov. (nec Thom.), Ill. N. A. ent., Orth., pl. 18, fig. 14 (1874)—Oedipoda.

nanus Sauss., Prodr. Oedip., 86-87 (1884).

tuberculatus McNeill (nec Palis.), Psyche, vi, 63 (1891).

neglectus Thom., Key Ill. Orth., 3 (1875)—Oedipoda.

Central U. S.

pantherinus Scudd., Psyche, vi, 267, 285-286 (1892).

Texas.

phoenicopter Germ., Burm., Handb. ent., ii, 643 (1838)—Oedipoda.

Haan, Bijdr. kenn. Orth., 144 (1842)—Acridium (Oedipoda).

Sauss., Prodr. Oedip., 87 (1884).

discoideus Serv., Orth., 724 (1839)—Oedipoda.

Southern U. S. east of Great Plains.

rugosus Scudd., Bost. journ. nat. hist., vii, 469 (1862)—Oedipoda.

Scudd., Hitchc., Rep. geol. N. H., i, 377 (1874).

U. S. east of Rocky Mts.

saussurei Scudd., Psyche, vi, 268, 302 (1892).

halilemanii Thom. (nec Scudd.), Ann. rep. U. S. geol. surv. terr., v, 456 (1872)—Oedipoda.

Texas.

suturalis Scudd., Psyche, vi, 268, 301-302 (1892).

rugosus McNeill (nec Scudd.), Psyche, vi, 63 (1891).

Illinois.

texanus Scudd., Psyche, vi, 267, 286-287 (1892).

Texas.

tuberculatus Palis., Ins. Afr. Amér., 145, pl. 4, fig. 1 (1817)—Acridium.

Harr., Cat. ins. Mass., 56 (1835)—Locusta.

Sauss., Prodr. Oedip., 87-88 (1884).

apiculatus Say, Harr., Cat. ins. Mass., 56 (1835)—Locusta.

obliteratus Germ., Burm., Handb. ent., ii, 643 (1838)—Oedipoda.

corallinus Harr., Ins. inj. veg., 142 (1842)—Locusta.

phoenicopter Scudd. (nec Germ.), Bost. journ. nat. hist., vii, 468-469 (1862)—Oedipoda.

N. America east of the Rocky Mts., rare southwardly.

variegatus Scudd., Psyche, vi, 268, 301 (1892).

Central U. S. east of Great Plains.

(Stictippus.)

californicus Scudd., Psyche, vi, 269, 317-318 (1892).

California.

marmoratus Scudd., Psyche, vi, 269, 318 (1892).

California.

HIPPISCUS (Continued).

(Xanthippus.)

affrictus Scudd., Psyche, vi, 272, 336, 347 (1892).

Dakota, Nevada, Colorado, Arizona.

albulus Scudd., Psyche, vi, 273, 350, 359 (1892).

Arizona.

altivolus Scudd., Psyche, vi, 272, 347-348 (1892).

Mountains of Colorado.

aurilegulus Scudd., Psyche, vi, 274, 362-363 (1892).

California.

calthulus Sauss., Prodr. Oedip., 93 (1884)—Xanthippus.

Scudd., Psyche, vi, 274, 361-362 (1892).

Nevada, California.

conspicuous Scudd., Psyche, vi, 271, 319-320 (1892).

Kansas, New Mexico.

corallipes Hald., Stansb., Expl. Utah, 371, pl. 10, fig. 2 (1852)—
Oedipoda.

Scudd., Bull. U. S. geol. surv. terr., ii, 264 (1876)—Hippiscus.

Sauss., Prodr. Oedip., 90 (1884)—Xanthippus.

Scudd., Psyche, vi, 270, 318-319 (1892).

Great Plains and Rocky Mt. region.

cupidus Scudd., Psyche, vi, 272, 348-349 (1892).

Arizona.

eremitus Scudd., Psyche, vi, 271, 320, 333 (1892).

Arizona.

griseus Scudd., Psyche, vi, 274, 362 (1892).

Utah.

lateritus Sauss., Prodr. Oedip., 92-93 (1884)—Xanthippus.

Scudd., Psyche, vi, 274, 361 (1892).

Riley, N. A. fauna, vii, 251 (1893)—Hippiscus.

Nevada, California.

latifasciatus Scudd., Psyche, vi, 273, 359 (1892).

Manitoba, Alberta, Dakota.

leprosus Sauss., Prodr. Oedip., 92 (1884)—Xanthippus.

Scudd., Psyche, vi, 271, 334 (1892).

Montana, Nevada, New Mexico.

maculatus Scudd., Psyche, vi, 271, 333-334 (1892).

Colorado, Arizona.

montanus Thom., Ann. rep. U. S. geol. surv. terr., v, 462 (1872)—
Oedipoda.

Brun., Can. ent., xvii, 12 (1885)—Hippiscus.

Scudd., Psyche, vi, 273, 361 (1892).

Idaho, Montana, Nebraska, New Mexico, Arizona.

neglectus Thom., Proc. acad. nat. sc. Philad., 1870, 81-82 (1870)—
Oedipoda.

Thom., Proc. Dav. acad. nat. sc., i, 254 (1876)—Arphia.

Scudd., Bull. U. S. geol. surv. terr., ii, 264 (1876)—Hippiscus.

Sauss., Prodr. Oedip., 94-95 (1884)—Xanthippus.

Scudd., Psyche, vi., 273, 360-361 (1892).

putnami Thom., Proc. Dav. acad. nat. sc., i, 257, pl. 36, fig. 6 (1876)
—Cratypedes

lineatus Scudd., Proc. Bost. soc. nat. hist., xix, 31 (1877)—Hippiscus.

Rocky Mt region and Interior Basin.

obscurus Scudd., Psyche, vi, 273, 359-360 (1892).

British Columbia.

paradoxus Thom., Ann. rep. U. S. geol. surv. terr., v, 457 (1872)—
Oedipoda.

Scudd., Psyche, vi, 271, 335-336 (1892).

Idaho and Nebraska to Arizona and New Mexico.

pardalinus Sauss., Rev. mag. zool., 1861, 324 (1861)—Oedipoda.

Sauss., Prodr. Oedip., 90-91 (1884)—Xanthippus.

Scudd., Psyche, vi, 271, 333 (1892).

California, Nevada, Utah, New Mexico.

pumilus Scudd., Psyche, vi, 272, 349-350 (1892).

Colorado, New Mexico, Arizona.

stigmatosus Scudd., Psyche, vi, 274, 363 (1892).

California, Nevada.

tigrinus Scudd., Psyche, vi, 271, 334 (1892).

Nebraska, Colorado, Arizona.

toltecus Sauss., Prodr. Oedip., 91-92 (1884)—Xanthippus.

Scudd., Psyche, vi, 272, 347 (1892).

Montana, Wyoming, Utah.

vitellinus Sauss., Prodr. Oedip., 94 (1884)—Xanthippus.

Scudd., Psyche, vi, 274, 362 (1892).

Oregon, Nevada, Idaho.

zapotecus Sauss., Prodr. Oedip., 91 (1884)—Xanthippus.

Scudd., Psyche, vi, 270, 319 (1892).

Iowa to New Mexico and California.

LEPRUS Saussure.

corpulentus Sauss., Prodr. Oedip., 96 (1884).

Texas.

intermedius Sauss., Prodr. Oedip., 96 (1884).

California.

wheeleri Thom., Rep. U. S. geol. surv. west 100 mer., v, 879, pl. 44,
fig. 1 (1875)—Oedipoda.

Brun., Bull. Washb. coll., i, 133 (1885)—Picnodictya.

Sauss., Add. prodr. Oedip., 169 (1888).

Colorado, Utah, New Mexico.

AGYMNASTUS Scudder.

ingens Scudd., Proc. Bost. soc. nat. hist., xix, 32 (1877)—Leprus.

Scudd., Can. ent., xxix, 75 (1897).

California.

TROPIDOLOPHUS Thomas.

formosus Say, Amer. ent., iii, pl. 34 (1828)—Gryllus.

Thom., Rep. U. S. geol. surv. terr., v, 138, pl., fig. 1 (1873).

Wyoming to Kansas and New Mexico.

DISSOSTEIRA Scudder.

carolina Linn., Syst. nat., 10 ed., i, 433 (1758)—Gryllus (Locusta).

De Geer, Mém., iii, 491, pl. 47, fig. 2, 3 (1773)—Acrydium.

Fabr., Syst. ent., 291 (1775)—Gryllus.

Harr., Hitchc., Rep. geol. Mass., 583 (1833)—Locusta.

Burm., Handb. ent., ii, 643 (1838)—Oedipoda.

Scudd., Proc. Bost. soc. nat. hist., xix, 89 (1877).

Prov., Faune ent. Can., ii, 39 (1877)—Oedipoda (Dissosteira).

Caulf., Can. Orth., 12, 13 (1887)—Oedipoda (Hippiscus).

Towns., Proc. ent. soc. Wash., i, 266-267 (1890)—Dissosteira
(Oedipoda).

caroliniana Catesby, Carol., ii, 89, pl. 89 (1743)—Locusta.

U. S. and Canada, ocean to ocean.

longipennis Thom., Ann. rep. U. S. geol. surv. terr., v, 463 (1872)
—Oedipoda.

Scudd., Ann. rep. chief eng., 1876, 511 (1876).

Riley, Stand. nat. hist., ii, 202 (1884)—Oedipoda (Dissosteira).

nebrascensis Brun., Can. ent., viii, 123 (1876)—Oedipoda.

Idaho and Montana to New Mexico and Texas.

spurcata Sauss., Prodr. Oedip., 137 (1884).

obliterata Thom. (nec Germ.), Can. ent., xii, 221-222 (1880)—Oedipoda.

California, Oregon.

utahensis Thom., Rep. U. S. geol. surv. west 100 mer., v, 883, pl. 44, fig. 2, (1875)—Oedipoda.

Sauss., Add. prodr. Oedip., 167 (1888).

Utah.

SPHARAGEMON Scudder.

aequale Say, Journ. acad. nat. sc. Philad., iv, 307 (1825)—Gryllus.

Harr., Cat. ins. Mass., 56 (1835)—Locusta.

Uhl., Harr., Ins. inj. veg., 3 ed., 178 (1862)—Oedipoda.

Scudd., Hitchc., Rep. geol. N. H., i, 377 (1874)—Trimerotropis.

Scudd., Proc. Bost. soc. nat. hist., xvii, 468 (1875).

Sauss., Prodr. Oedip., 139-140 (1884)—Dissosteira (Spharagemon).

? *belfragei* Stal, Rec. Orth., i, 129 (1873)—Oedipoda.

U. S. and Canada from Rocky Mts. eastward.

bolli Scudd., Proc. Bost. soc. nat. hist., xvii, 469 (1875).

Sauss., Prodr. Oedip., 140 (1884)—Dissosteira (Spharagemon).

balteatum Scudd., Proc. Bost. soc. nat. hist., xvii, 469 (1875).

Massachusetts to Georgia, Texas and Nebraska.

collare Scudd., Rep. U. S. geol. surv. Nebr., 250 (1871)—Oedipoda.

Scudd., Proc. Bost. soc. nat. hist., xvii, 470 (1875).

Sauss., Prodr. Oedip., 139 (1884)—Dissosteira (Spharagemon).

Northern U. S. and Canada from Rocky Mts. eastward.

cristatum Scudd., Proc. Bost. soc. nat. hist., xvii, 470 (1875).

Sauss., Prodr. Oedip., 138-139 (1884)—Dissosteira (Spharagemon).

Brun., Publ. Nebr. acad. sc., iii, 24 (1893)—Arphia.

Texas, Nebraska.

oculatum Morse, Proc. Bost. soc. nat. hist., xxvi, 232-234, 237-240, fig. 8 (1894).

New Jersey, Indiana.

saxatile Morse, Proc. Bost. soc. nat. hist., xxvi, 229-232, 235-236, 238-239, fig. 4, 5 (1894).

New England to Maryland.

texense Sauss., Prodr. Oedip., 140 (1884)—Dissosteira (Spharagemon).

Texas

venustum Stål, Orth. Eug. resa., 344 (1861)—Oedipoda.

Sauss., Prodr. Oedip., 138 (1884)—Dissosteira (Spharagemon).

California, Oregon.

SPHARAGEMON (Continued).

wyomingianum Them., Ann. rep. U. S. geol. surv. terr., v, 462 (1872)—Oedipoda.

Scudd., Proc. Bost. soc. nat. hist., xvii, 470 (1875).

wyomingense Blatchl., Orth. Ind., 2 (1897)

Wyoming, Indiana.

SCIRTETICA Saussure.

marmorata Harr., Ins. inj. veg., 145 (1841)—Locusta.

Uhl., Harr., Ibid., 3 ed., 179 (1862)—Oedipoda.

Sauss., Prodr. Oedip., 141 (1884)—Dissosteira (Scirtetica).

Davis, Ent. amer., v, 81 (1889)—Psinidia.

Smith, Cat. ins. N. J., 415 (1890).

cerincipennis Harr., Cat. ins. Mass., 56 (1835)—Locusta—undescribed.

North Atlantic coast, Ontario, Texas

occidentalis Brun., N. A. fauna, vii, 267 (1893).

California.

picta Scudd., Proc. Bost. soc. nat. hist., xix, 31, 90 (1877)—Trimerotropis.

Sauss., Prodr. Oedip., 141-142 (1884)—Dissosteira (Scirtetica).

Georgia, Florida.

LACTISTA Saussure.

gibbosus Sauss., Prodr. Oedip., 143 (1884).

California.

TOMONOTUS Saussure.

aztecus Sauss., Rev. mag. zool., 1861, 397 (1861)—Oedipoda.

Sauss., Prodr. Oedip., 99 (1884).

Texas.

orizabae Sauss., Prodr. Oedip., 98 (1884).

mexicanus Sauss., Rev. mag. zool., 1861, 397 (1861)—Oedipoda.

[not *Tom. mex.* Sauss., Ibid, 1861, 321.]

Texas.

theresia Brunn., Berl. ent. zeitschr., xl, 277 (1895).

N. Dakota.

DEROTMEMA Scudder.

cupidineum Scudd., Ann. rep. chief. eng., 1876, 513 (1876).

New Mexico.

haydeni Thom., Rep. U. S. geol. surv. terr., v, 460 (1871)—Oedipoda.

Brun., Ann. rep. Nebr. bd. agric., 1896, 132 (1897).

brunnerianum Sauss., Prodr. Oedip., 155-156 (1884).

Nebraska, Colorado, Wyoming.

riley anum Sauss., Prodr. Oedip., 156 (1884).

Idaho.

MESTOBREGMA Scudder.

asperum Scudd., Ann. rep. chief eng., 1876, 512 (1876) Trachyrachis.

New Mexico.

boreale Sauss., Prodr. Oedip., 164 (1884)—Psinidia (Trachyrachis).

Sauss., Add. prodr. Oedip., 59 (1888)—Trachyrachis.

Colorado.

capito Stål, Rec. Orth., i, 133 (1873)—Psinidia.

Sauss., Prodr. Oedip., 163 (1884)—Psinidia (Trachyrachis).

Sauss., Add. prodr. Oedip., 58 (1888)—Trachyrachis.

Texas.

cinctum Thom., Proc. acad. nat. sc. Philad., 1870, 80 (1870)—Oedipoda.

Thom., Bull. Ill. mus. nat. hist., i, 65 (1876).

Brun., Publ. Nebr. acad. sc., iii, 25 (1893)—Trachyrachis.

Upper Mississippi valley, Colorado.

coronatum Scudd., Ann. rep. chief eng., 1876, 512 (1876)—Trachyrachis.

New Mexico.

fuscifrons Stål, Rec. Orth., i, 134 (1873)—Psinidia.

Sauss., Prodr. Oedip., 163 (1884)—Psinidia (Trachyrachis).

Sauss., Add. Prodr. Oedip., 58 (1888)—Trachyrachis.

Texas.

kiowa Thom., Ann. rep. U.S. geol. surv. terr., v, 461 (1872)—Oedipoda.

Thom., Rep. U.S. geol. surv. west 100 mer., v, 885 (1875)—Psinidia.

Thom., Proc. Dav. acad. nat. sc., i, 256 (1876).

Sauss., Prodr. Oedip., 164 (1884)—Psinidia (Trachyrachis).

Sauss., Add. prodr. Oedip., 59, 168 (1888)—Trachyrachis.

Dakota and Montana to Nebraska and Utah.

maculosum Sauss., Prodr. Oedip., 162-163 (1884)—Psinidia (Trachyrachis).

Sauss., Add. prodr. Oedip., 58, 59 (1888)—Trachyrachis.

Alberta.

mexicanum Sauss., Prodr. Oedip., 164 (1884)—Psinidia (Trachyrachis).

MESTOBREGMA (Continued).

Sauss., Add. prodr. Oedip. 59, (1888)—Trachyrachys.
Western Nebraska.

pardalinum Sauss., Rev. mag. zool., 1861, 324 (1861)—Oedipoda.
Sauss., Prodr. Oedip., 162 (1884)—Psinidia (Trachyrachis).
Sauss., Add. prodr. Oedip., 58, 59 (1888)—Trachyrachis.

MESTOBREGMA (Continued).

Brun., Ann. rep. Nebr. bd. agric., 1896, 132 (1897).
Nebraska, Colorado.

plattei Thom., Rep. U. S. geol. surv. terr., v, 123 (1873)—Oedipoda.
Scudd., Bull. U. S. geol. surv. terr., ii, 264 (1876).
Sauss., Add. prodr. Oedip., 170-171 (1888)—Trachyrachis.
Brun., Ann. rep. Nebr. bd. agric., 1896, 132 (1897)—Psinidia.
Wyoming, Colorado, Nebraska, Kansas.

PSINIDIA Stål.

fenestralis Serv., Orth., 726 (1839)—Oedipoda.
Stål., Rec. Orth., i, 133 (1873).
cucurata Harr., Hitchc., Rep. geol. Mass., 583 (1833)—Locusta—
undescribed.
Harr., Ins. inj. veg., 145 (1841)—Locusta.
U. S. and Canada east of Mississippi River.

CONOZOA Saussure.

albolineata Brun., Proc. U. S. nat. mus., xii, 66-67 (1890).
California.
behrensi Sauss., Prodr. Oedip., 165 (1884).
California.
koebelei Brun., Proc. U. S. nat. mus., xii, 67-68 (1890).
California.
rebellis Sauss., Add. prodr. Oedip., 60, 61 (1888).
California.
rogenhoferi Sauss., Add. prodr. Oedip., 62, pl., figs. 4, 4ab (1888).
"Bagdad" [California?]
sulcifrons Scudd., Ann. rep. chief eng., 1876, 513 (1876)—Psinidia.
Sauss., Prodr. Oedip., 166 (1884).
California, Arizona.
texana Brun., Proc. U. S. nat. mus., xii, 65-66 (1890).
Texas.

- wallula** Scudd., Rep. U. S. ent. comm., ii, app., 27-28, pl. 17, figs. 13, 14 (1881)—Psinidia.
 Sauss., Prodr. Oedip., 166 (1884).
 Washington to California and Montana.

TRIMEROTROPIS Stal.

- azurescens** Brun., Proc. U. S. nat. mus., xii, 69-70 (1890).
 Idaho, Montana, Wyoming.
- bifasciata** Brun., Proc. U. S. nat. mus., xii, 70-71 (1890).
 California.
- caeruleipennis** Brun., Can. ent., xvii, 10-12 (1885).
 Washington to Wyoming and Arizona.
- caeruleipes** Scudd., Rep. U. S. ent. comm., ii, app., 27 (1881).
 Oregon, California.
- californica** Brun., Proc. U. S. nat. mus., xii, 71 (1890).
 California.
- cincta** Thom., Proc. acad. nat. sc. Philad., 1870, 80 (1870)—Oedipoda.
 Sauss., Prodr. Oedip., 171-172 (1884).
 Brun., Publ. Nebr. acad. sc., iii, 25 (1893)—Trachyrachis.
 Illinois to New Mexico, California.
- citrina** Scudd., Bull. U. S. geol. surv. terr., ii, 265 (1876).
 Manitoba to Texas.
- cyanipennis** Brun., Proc. U. S. nat. mus., xii, 68-69 (1890).
 Utah.
- fallax** Sauss., Prodr. Oedip., 170 (1884).
 California.
- fontana** Thom., Proc. Dav. acad. nat. sc., i, 255, pl. 36, fig. 5 (1876).
 Utah, Yellowstone.
- gracilis** Thom., Ann. rep. U. S. geol. surv. terr., v, 461 (1871)—Oedipoda.
 Sauss., Prodr. Oedip., 171 (1884).
 Brun., Publ. Nebr. acad. sc., iii, 25 (1893)—Conozoa.
 Idaho and Dakota to Colorado and Nebraska.
- juliana** Scudd., Ann. rep. chief eng., 1876, 514 (1876).
 California.
- laticincta** Sauss., Prodr. Oedip., 169-170 (1884).
 Texas, Colorado.
- latifasciata** Scudd., Rep. U. S. ent. comm., ii, app., 26-27 (1881).
 Washington to Utah.

TRIMEROTROPIS (Continued).

maritima Harr., Ins. inj. veg., 143 (1841)—Locusta.

Uhl., Harr., Ibid., 3 ed., 178 (1862)—Oedipoda.

Stål, Rec. Orth., i, 135 (1873).

Atlantic coast from New Hampshire to Georgia and Great Lakes.

modesta Brun., Proc. U. S. nat. mus., xii, 72 (1890).

New Mexico.

monticola Sauss., Prodr. Oedip., 170 (1884).

New Mexico.

obscura Scudd., Ann. rep. chief eng., 1876, 514 (1876).

New Mexico.

pacifica Brun., Proc. U. S. nat. mus., xii, 73-74 (1890).

California.

perplexa Brun., Proc. U. S. nat. mus., xii, 74-75 (1890).

Nebraska.

pistrinaria Sauss., Prodr. Oedip., 173 (1884).

Texas.

pseudofasciata Scudd., Ann. rep. chief eng., 1876, 514 (1876).

California and Washington to Colorado.

similis Scudd., Rep. U. S. ent. comm., ii, app., 27 (1881).

Washington.

thalassica Brun., Proc. U. S. nat. mus., xii, 72-73 (1890).

California.

vinculata Scudd., Proc. Bost. soc. nat. hist., xviii, 270 (1876).

California and Victoria to Nebraska.

CIRCOTETTIX Scudder.

carlinianus Thom., Proc. acad. nat. sc. Philad., 1870, 81 (1870)—
Oedipoda.

Thom., Proc. Dav. acad. nat. sc., i, 254 (1876).

Riley, Stand. nat. hist., ii, 202-203 (1884)—Oedipoda (Circotettix).

Colorado to Nevada, northward.

lapidicola Brun., Proc. U. S. nat. mus., xii, 75-76 (1890).

Idaho.

lobatus Sauss., Add. prodr. Oedip., 65-66, pl., fig. 5 (1888).

Colorado.

maculatus Scudd., Rep. U. S. ent. comm., ii, app., 26, pl. 17, fig. 10
(1881).

Sierra Nevadas.

? **occidentalis** Brun., Proc. U. S. nat. mus., xii, 77-78, pl. 1, fig. 7 (1890)—Oedipoda.

California.

shastanus Brun., Proc. U. S. nat. mus., xii, 76-77 (1890).

California.

sparsus Thom., Rep. U. S. geol. surv. west 100 mer., v, 883, pl. 45, fig. 6 (1875)—Oedipoda.

Sauss., Add. prodr. Oedip., 172-173 (1888).

New Mexico.

suffusus Scudd., Bull. U. S. geol. surv. terr., ii, 265 (1876)—Trimerotropis.

Scudd., Appal., viii, 308-309 (1898).

Northern U. S. west of Rocky Mts.

thallassinus Sauss., Prodr. Oedip., 177-178 (1884).

Nevada.

undulatus Thom., Ann. rep. U. S. geol. surv. terr., v, 460 (1871)—Oedipoda.

Scudd., Bull. U. S. geol. surv. terr., ii, 265 (1876).

Rocky Mt. region to Pacific north of Lat. 40°.

verruculatus Kirb., Faun. bor. amer., iv, 250 (1837)—Locusta.

Haan, Bijdr. kenn. Orth., 143 (1842)—Acridium (Locusta).

Scudd., Can. nat., vii, 287 (1862)—Oedipoda.

Scudd., Hitchc., Rep. geol. N. H., i, 377, fig. 57 (1874)—Trimerotropis.

Prov., Faune ent. Can., ii, 40 (1877)—Oedipoda (Trimerotropis).

Sauss., Prodr. Oedip., 175-176 (1884).

latipennis Harr., Ins. inj. veg., 144 (1841)—Locusta.

Northern U. S. and Canada from Atlantic to Pacific.

HADROTETTIX Scudder.

trifasciatus Say, Amer. ent., iii, pl. 34 (1828)—Gryllus.

Walk., Cat. Derm. salt. Brit. mus., iv, 729 (1870)—Oedipoda.

Scudd., Ann. rep. chief eng., 1876, 511 (1876).

Caulf., Rep. ent. soc. Ont., xviii, 70 (1888)—Arphia.

pruinus Thom., Proc. acad. nat. sc. Philad., 1870, 80 (1870)—Oedipoda.

hoffmanii Thom., Rep. U. S. geol. surv. terr., v, 127 (1873)—Oedipoda.
Rocky Mt. region.

ANCONIA Scudder.

integra Scudd., Ann. rep. chief eng., 1876, 515 (1876).
California.

HELIASTUS Saussure.

aridus Brun., Proc. U. S. nat. mus., xii, 78-79, pl. 1, figs. 2, 3 (1890)
—*Thrincus*.

Scudd., Can. ent., xxix, 75 (1897).

New Mexico, California.

californicus Thom., Bull. U. S. geol. surv. terr., i, no. 2, ser. 1, 66
(1874)—*Thrincus*.

Scudd., Can. ent., xxix, 75 (1897).

California.

Eremobiini.

BRACHYSTOLA Scudder.

magna Gir., Marcy, Expl. Red River, 260, pl. 15, fig. 1-4 (1853)—
Brachypeplus.

Scudd., Bull. U. S. geol. surv. terr., ii, 267 (1876).

Rocky Mts. to Mississippi River.

virescens Charp., Orth. descr., pl. 51 (1841-1845)—*Brachypeplus*.

Brun., Rep. U. S. ent. comm., iii, 58 (1883).

Texas.

TYTTHOTYLE Scudder.

maculata Brun., Proc. U. S. nat. mus., xii, 79-80 (1890)—*Thrincus*.

Scudd., Can. ent., xxix, 75 (1897).

Extreme southwestern U. S.

HALDEMANELLA Saussure.

robusta Brun., Proc. U. S. nat. mus., xii, 81-82 (1890).

Arizona.

tschivavensis Hald., Stansb., Expl. Utah, 371, pl. 10, fig. 3 (1852)
—*Ephippigera*.

Sauss., Add. prodr. Oedip., 153-154 (1888).

verruculata Uhl., Glov., Ill. N. A. ent., Orth., pl. 6, fig. 25 (1872)
—*Phrynotettix*.

magna Thom., Rep. U. S. geol. surv. west 100 mer., v, 886, pl. 43,
fig. 5 (1875)—*Eremobia*.

Utah to Texas.

ACRIDIINAE.

Tropidonoti.

DRACOTETTIX Bruner.

monstrosus Brun., Proc. U. S. nat. mus. xii, 50-51, pl. 1, fig. 1 (1890).

California.

plutonius Brun., N. A. fauna, vii, 267-268 (1893).

California.

Tueniopodae.

DICTYOPHORUS Thunberg.

marci Serv., Orth., 623 (1839)—R[h]omalea.

Brun., Rep. U. S. ent. comm., iii, 58 (1883).

Southern states.

reticulatus Thunb., Mém. acad. St. Petersb., v, 259 (1815).

micropterus Palis., Ins. Afr. Amér., 146, pl. 4, fig. 4 (1817)—Acridium.

giganteus Burm., Handb. ent., ii, 619 (1838)—Rhomalea.

centurio (pars) Burm. (nec Drury), Ibid., ii, 620 (1838)—Rhomalea.

Southern U. S.

Rhomaleae.

RHOMALEA Burmeister.

colorata Serv., Orth., 674 (1839)—Acridium.

Walk., Cat. Derm. salt. Brit. mus., iv, 644 (1870)—Chromacris.

Stål, Rec. Orth., i, 51 (1873).

pedes Sauss., Rev. mag. zool., 1859, 392 (1859).

S. Carolina, Texas.

Tropidacres.

TROPIDACRIS Scudder.

dux Drury, Ill. nat. hist., ii, 82, pl. 44 (1773)—Gryllus (Locusta).

Oliv., Encycl. méth., vi, 215, pl. 126, fig. 1 (1791)—Acridium.

Westw., Drury, Ins., ii, 92, pl. 44 (1837)—Locusta (Rutioderes).

Dunc., Intr. ent., 257, pl. 15, fig. 2 (1840)—Locusta.

Scudd., Proc. Bost. soc. nat. hist., xii, 347 (1869).

latreillei Perty, Delect. anim. artic., 123, pl. 24, fig. 4 (1834)—Acridium.

cristata Thunb. (nec Linn.), Mém. acad. St. Petersb., v, 224 (1815)

—Gryllus.

Texas.

Mesopes.

PSEUDOPOMALA Morse.

aptera Scudd., Trans. amer. ent. soc., ii, 305 (1869)—Opomala.

McNeill, Proc. Dav. acad. nat. sc., vi, 209 (1897).

Pennsylvania.

brachyptera Scudd., Bost. journ. nat. hist., vii, 454 (1862)—Opomala.

Osborne, Proc. Iowa acad. sc., i, pt. 2, 118 (1892)—Mermiria.

Brun., Publ. Nebr. acad. sc., iii, 23 (1893)—Stetheophyma.

Morse, Psyche, vii, 325, 343-344, 382, pl. 7, fig. 6, 6ab (1896).

Northern U. S. east of Rocky Mts.

PAROPOMALA Scudder.

calamus Scudd., Psyche, viii, 437 (1899).

California.

cylindrica Brun., Proc. U. S. nat. mus., xii, 48-49 (1890)—Mesops.

Scudd., Psyche, viii, 437 (1899).

Nebraska, Colorado.

virgata Scudd., Psyche, viii, 437 (1899).

California to New Mexico.

wyomingensis Thom., Proc. acad. nat. sc. Philad., 1871, 152 (1871)

—Mesops.

Thom., Ann. rep. U. S. geol. surv. terr., v, 446, pl. 2, fig. 8 (1872)

—Opomala.

Scudd., Psyche, viii, 437 (1899).

Wyoming, Kansas.

Leptysmac.

ARNILIA Stål.

chlorizans Walk., Cat. Derm. salt. Brit. mus., iv, 652-653 (1870)—

Stenacris.

Thom., Rep. U. S. geol. surv., v, 60 (1873)—Mesops.

Scudd., Proc. Bost. soc. nat. hist., xix, 88 (1877).

Florida.

cylindroides Stål, Eug. resa, ins., Orth., 325 (1860)—Opomala.

Stål, Rec. Orth., i, 85 (1873).

Carolina.

mexicana Sauss., Rev. mag. zool., 1861, 156 (1861)—Opomala.

Bol., Mém. soc. zool. France, i, 146 (1888).

Ril., N. A. Fauna, vii, 252 (1893)—Leptysmac.

California.

LEPTYSMA Stål.

marginicollis Serv., Orth., 591 (1839)—Opsomala.

Haan, Bijdr. kenn. Orth., 143 (1842)—Acridium (Opsomala).

Stål, Rec. Orth., i, 86 (1873).

Southern states east of Mississippi.

Acridia.

SCHISTOCERCA Stål.

albolineata Thom., Rep. U. S. geol. surv. west 100 mer., v, 897, pl. 43, fig. 1 (1875)—Acridium.

Scudd., Proc. amer. acad. arts sc., xxxiv, 445, 466 (1899).

Iowa and Idaho to New Mexico.

alutacea Harr., Ins. inj. veg., 139 (1841)—Acridium.

Walk., Cat. Derm. salt. Brit. mus., iv, 609 (1870)—Cyrtacanthacris.

Brun., Publ. Nebr. acad. sc., iii, 26 (1893).

emarginata Uhl., Dodge, Can. ent., iv, 15 (1871)—Acridium.

U. S. east of Sierra Nevadas, southern California.

americana Drury, Ill. nat. hist., i, 128, pl. 49, fig. 2 (1770)—Gryllus.

Scudd., Bost. journ. nat. hist., vii, 466 (1862)—Acridium.

Walk., Cat. Derm. salt. Brit. mus., iii, 550 (1870)—Cyrtacanthacris.

Stål, Rec. Orth., i, 66 (1873)—Acridium (Schistocerca).

Brun., Bull. Washb. coll., i, 136 (1885).

succincta (pars) Linn., Syst. nat., ed. xii, i, 699 (1767)—Gryllus.

rustica Fabr., Syst. ent., 292 (1775)—Gryllus.

tartarica Panz., Drury, Ins., pl. 49, fig. 2 (1785-1788)—Gryllus.

serialis Thunb., Mém. acad. St. Petersb., v, 241 (1815)—Gryllus.

vittata Palis., Ins. Afr. Amér., 146, pl. 4, fig. 5 (1817)—Acridium.

ambigua Thom., Ann. rep. U. S. geol. surv., v, 447 (1872)—Acridium.

obscura Bol. (nec Fabr.), Mém. soc. zool. France, 1888, 144 (1888).

U. S. east of Great Plains.

carinata Scudd., Proc. amer. acad. arts sc., xxxiv, 443, 449 (1899).
California.

damnifica Sauss., Rev. mag. zool., 1861, 164 (1861)—Acridium.

Scudd., Proc. amer. acad. arts sc., xxxiv, 447, 475-476 (1899).

unilineata Walk., Cat. Derm. salt. Brit. mus., iv, 611 (1870)—Cyrtacanthacris.

rubiginosa Thom. (nec Harr.), Rep. U. S. geol. surv. terr., v, 170 (1873)—Acridium.

rugosa Prov., Nat. canad., viii, 111 (1876)—Acridium.

SCHISTOCERCA (Continued).

appendiculata Uhl., Scudd., Proc. Bost. soc. nat. hist., xix, 86 (1877)
—Acridium.

From Pennsylvania and Illinois to the Gulf.

lineata Scudd., Proc. amer. acad. arts sc., xxxiv, 445, 465-466 (1899).
Kansas to Texas.

obscura Fabr., Suppl. ent. syst., 194 (1798)—Gryllus.

Burm., Handb. ent., ii, 632 (1838)—Acridium.

Scudd., Proc. amer. acad. arts sc., xxxiv, 444, 465 (1899).

olivacea Serv., Orth., 666 (1839)—Acridium.

Southern U. S., east of Rocky Mts.

rubiginosa Harr., Scudd., Bost. journ. nat. hist., vii, 467 (1862)—
Acridium.

Morse, Psyche, vii, 105 (1894).

? *scutellaris* Walk., Cat. Derm. salt. Brit. mus., iii, 579 (1870)—Acridium.

U. S. east of Great Plains.

shoshone Thom., Proc. acad. nat. sc. Philad., 1873, 295 (1873)—
Acridium.

Brun., Rep. Nebr. st. hort. soc., 1894, 163 (1894).

U. S. west of Rocky Mts., Texas.

vaga Scudd., Proc. Bost. soc. nat. hist., xviii, 269 (1876)—Acridium.

Brun., Proc. U. S. nat. mus., xii, 187 (1890).

California to Texas.

venusta Scudd., Proc. amer. acad. arts sc., xxxiv, 445, 467-468 (1899).
Pacific coast to Texas.

Melanopli.

GYMNOSCIRTETES Bruner.

pusillus Brun., Scudd., Rev. Mel., 15-16, pl. 2, fig. 1 (1897).
Florida.

PHAEDROTETTIX Scudder.

augustipennis Brun., Scudd., Rev. Mel., 22-23, pl. 2, fig. 7 (1897).
Texas.

CONALCAEA Scudder.

neomexicana Scudd., Rev. Mel., 24, 26, pl. 2, fig. 9 (1897).
New Mexico.

RHABDOTETTIX Scudder.

concinus Scudd., Rev. Mel., 33-34, pl. 3, fig. 2 (1897).
Texas.

CYCLOCERCUS Scudder.

accola Scudd., Rev. Mel., 37, 38-39, pl. 3, fig. 5 (1897).

Texas.

PARAIDEMONA Brunner.

mimica Scudd., Rev. Mel., 42, 43-44, pl. 3, fig. 10 (1897).

Texas.

punctata Stål, Bih. sv. vet. akad. handl., v, no. 9, 11 (1878)—Pezotettix.

Brunn., Rév. syst. Orth., 145 (1893).

nuda Scudd., Proc. Bost. soc. nat. hist., xx, 77 (1879)—Pezotettix.

Texas.

HYPOCHLORA Brunner.

alba Dodge, Can. ent., viii, 10 (1876)—Pezotettix.

Brunn., Rév. syst. Orth., 145 (1893).

Manitoba to Kansas.

CAMPYLACANTHA Scudder.

acutipennis Scudd., Proc. Bost. soc. nat. hist., xvii, 472 (1875)—
Pezotettix.

Brunn., Rév. syst. Orth., 145 (1893).

Kansas to Texas.

olivacea Scudd., Proc. Bost. soc. nat. hist., xvii, 472 (1875)—Pezotettix.

Scudd., Rev. Mel., 50, 51-52, pl. 4, fig. 4 (1897).

Nebraska to Texas.

vivax Scudd., Ann. rep. geol. surv. west 100 mer., 1876, 284 (1876)—
Pezotettix.

Scudd., Rev. Mel., 50, 52-53, pl. 4, fig. 6 (1897).

New Mexico.

EOTETTIX Scudder.

signatus McNeill, Scudd., Rev. Mel., 54-55, pl. 4, fig. 7 (1897).

Florida.

HESPEROTETTIX Scudder.

brevipennis Thom., Bull. U. S. geol. surv. terr., i, no. 2, ser. 1, 67
(1874)—Ommatolampis.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

viridis (pars) Uhl., Bull. U. S. geol. surv. terr., iii, 795 (1877).

Atlantic states.

HESPEROTETTIX (Continued).

curtipennis Brun., Scudd., Rev. Mel., 57, 62-63 (1897).

Colorado.

festivus Scudd., Rev. Mel., 56, 60-61, pl. 4, fig. 10 (1897).

viridis Scudd. (nec Thom.), Bull. U. S. geol. surv. terr., ii, 262 (1876).

Utah to California.

pacificus Brun., Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

California.

pratensis Scudd., Rev. Mel., 57, 64-66, pl. 5, fig. 3 (1897).

viridis (pars) Thom., Rep. U. S. geol. surv. terr., v, 156 (1873)—Ommatolampis.

Mississippi River westward to California.

speciosus Scudd., Rep. U. S. geol. surv. Nebr., 250 (1871)—Pezotettix.

Brunn., Rev. syst. Orth., 145 (1893)—Hypochlora.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

frontalis Thom., Ann. rep. U. S. geol. surv. terr., v, 448, pl. 2, fig. 1 (1872)—Acridium.

Rocky Mts. to Mississippi River.

viridis Thom., Ann. rep. U. S. geol. surv. terr., v, 450, pl. 2, fig. 3 (1872)—Caloptenus.

Thom., (pars) Rep. U. S. geol. surv. terr., v, 156 (1873)—Ommatolampis.

Uhl., (pars) Bull. U. S. geol. surv. terr., iii, 795 (1877).

Stål, Bih. sv. vet.-akad. handl., v, no. 9, 14 (1878)—Pezotettix.

Nebraska to Texas and California.

AEOLOPLUS Scudder.

arizonensis Scudd., Rev. Mel., 70, 78-79, pl. 6, fig. 3 (1897).

viridis Scudd. (nec Thom.), Ann. rep. chief eng., 1876, 506 (1876)
—Hesperotettix.

Arizona.

californicus Scudd., Rev. Mel., 69, 73-74, pl. 5, fig. 8 (1897).

California.

chenopodii Brun., Ins. life, vii, 41-42 (1894)—Pezotettix.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

Colorado.

elegans Scudd., Rev. Mel., 69, 71, pl. 5, fig. 6 (1897).

New Mexico.

oculatus Scudd., Rev. Mel., 70, 79-80, pl. 6, fig. 4 (1897).

Arizona.

plagosus Scudd., Ann. rep. chief eng., 1876, 504 (1876)—Pezotettix.

Scudd., Rev. Mel., 69, 76-77, pl. 6, fig. 1 (1897).

Colorado, New Mexico.

regalis Dodge, Can. ent., viii, 11-12 (1876)—Caloptenus.

Brun., Publ. Nebr. acad. sc., iii, 28 (1893)—Melanoplus.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

Wyoming to Texas.

tenuipennis Scudd., Rev. Mel., 69, 70-71, pl. 5, fig. 5 (1897).

Arizona.

turnbulli Brun., Ann. rep. U. S. geol. surv. terr., v, 452, pl. 2, fig. 10 (1872)—Caloptenus.

Brun., Bull. Washb. coll., i, 138 (1885)—Melanoplus.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

Montana to New Mexico.

uniformis Scudd., Rev. Mel., 70, 77-78, pl. 6, fig. 2 (1897).

Arizona, Nevada.

BRADYNOTES Scudder.

caurus Scudd., Rev. Mel., 81, 83-84, pl. 6, fig. 6 (1897).

opima Brun. (nec Scudd.), Can. ent., xvii, 15 (1885).

Washington, Oregon.

expleta Scudd., Rev. Mel., 81, 84-85, pl. 6, fig. 7 (1897).

Washington.

hispida Brun., Can. ent., xvii, 12-14 (1885)—Pezotettix.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

Washington.

obesa Thom., Ann. rep. U. S. geol. surv. terr., v, 454-455, pl. 2, fig. 13-14 (1872)—Pezotettix.

Scudd., Can. ent., 12, 75-76 (1880).

opima Scudd., Rep. U. S. ent. comm., ii, app., 24 (1881).

Wyoming to California.

pinguis Scudd., Rev. Mel., 81, 85-87, pl. 6, fig. 8 (1897).

Washington, Nevada.

referta Scudd., Rev. Mel., 81, 88-89, pl. 6, fig. 10 (1897).

Idaho to California.

satur Scudd., Rev. Mel., 81, 89-91, pl. 7, fig. 1 (1897).

California.

DENDROTETTIX Riley.

quercus Ril., Pack., Rep. U. S. ent. comm., v, 214-215 (1890).

longipennis Ril., Ins. life, v, 255 (1893).

Iowa to Texas.

PODISMA Latreille.

ascensor Scudd., Rev. Mel., 98, 107-108, pl. 7, fig. 8 (1897).

dodgei Scudd. (nec Thom.), Bull. U. S. geol. surv. terr., ii, 261 (1876)
—Pezotettix.

Utah.

dodgei Thom., Can. ent., iii, 168 (1871)—Caloptenus.

Thom., Rep. U. S. geol. surv. terr., v, 153 (1873)—Pezotettix.

Scudd., Rep. ent. soc. Ont., xxvi, 63, 66 (1896).

bohemani Stål, Bih. sv. vet.-akad. handl., v, no. 9, 15 (1878)—Pezotettix.

marshallii Scudd. (nec Thom.), Appal., i, 263 (1878)—Pezotettix.

aspirans Scudd., Proc. Bost. soc. nat. hist., xx, 85-86 (1879)—Pezotettix.

Colorado to Montana.

glacialis Scudd., Bost. journ. nat. hist., vii, 630-631, pl. 14, fig. 9, 10 (1863)—Pezotettix.

Walk., Cat. salt. Brit. mus., v, Suppl., 72 (1871).

borealis Glov. (nec Scudd.), Ill. N. A. ent., Orth., pl. 6, fig. 16-18 (1872)—Pezotettix.

Northern New England, New York, Ontario.

marshallii Thom., Rep. U. S. geol. surv. west 100 mer., v, 889-890, pl. 45, fig. 3 (1875)—Pezotettix.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

Colorado.

nubicola Scudd., Rev. Mel., 98, 102-104, pl. 7, fig. 5 (1897).

Colorado.

oregonensis Thom., Rep. U. S. geol. surv. west 100 mer., v, 888, 889 (1875)—Pezotettix.

Scudd., Rep. ent. soc. Ont., xxvi, 63 (1896).

Oregon, Idaho, Montana, Alberta.

polita Scudd., Proc. Dav. acad. sc., vii, 157-160, pl. 7, fig. 1, 2 (1899).

Oregon.

stupefacta Scudd., Ann. rep. chief eng., 1876, 503 (1876)—Pezotettix.

Scudd., Rev. Mel., 98, 104-105, pl. 7, fig. 6 (1897).

Colorado, New Mexico.

variegata Scudd., Rev. Mel., 97, 101-102, pl. 7, fig. 4 (1897).

glacialis Comst. (nec Scudd.), Intr. ent., 107 (1888).

New York, Ontario.

PARATYLOTROPIDIA Brunner.

brunneri Scudd., Rev. Mel., 118-120, pl. 9, fig. 4, 5 (1897).

Dakota to Texas.

MELANOPIUS Stål.

ablutus Scudd., Proc. Dav. acad. nat. sc., vii, 185-186, pl. 8, fig. 3 (1899).

California.

acutus Scudd., Proc. Dav. acad. nat. sc., vii, 168, 171-172 (1899).

Minnesota.

affinis Brun., Scudd., Proc. amer. phil. soc., xxxvi, 20, 32 (1897).

Utah to British Columbia.

alaskanus Scudd., Proc. amer. phil. soc., xxxvi, 20, 32 (1897).

Alaska, British Columbia.

algidus Scudd., Proc. Dav. acad. nat. sc., vii, 195, 199-201, pl. 9, fig. 6 (1899).

Oregon.

alleni Scudd., Proc. amer. phil. soc., xxxvi, 15, 34 (1897).

Iowa, Dakota.

alpinus Brun., Scudd., Proc. amer. phil. soc., xxxvi, 28, 35 (1897).

Colorado to Alberta.

altitudinum Scudd., Proc. Bost. soc. nat. hist., xx, 86 (1879)—Pezotettix.

Scudd., Rep. ent. soc. Ont., xxvi, 66 (1896).

marshallii Scudd. (nec Thom.), Ann. rep. chief eng., 1876, 502 (1876)

—Pezotettix.

sanguinipes Brun., Publ. Nebr. acad. sc., iii, 27 (1893)—Pezotettix.

Rocky Mt. region.

amplectens Scudd., Proc. amer. phil. soc., xxxvi, 13, 14, 34 (1897).

Kentucky.

angelicus Scudd., Proc. amer. phil. soc., xxxvi, 22, 32 (1897).

California.

angustipennis Dodge, Can. ent., ix, 111, (1877)—Caloptenus.

Brun., Bull. Washb. coll., i, 138 (1885).

Indiana to Montana.

arboreus Scudd., Proc. amer. phil. soc., xxxvi, 31, 35 (1897).

Texas to Arizona.

aridus Scudd., Proc. Bost. soc. nat. hist., xx, 84-85 (1879)—Pezotettix.

Scudd., Proc. amer. phil. soc., xxxvi, 8, 33 (1897).

humphreysii Thom. (pars), Rep. U. S. geol. surv. west 100 mer., v, 890, pl. 45, fig. 1, 2 (1875)—Pezotettix

Arizona.

MELANOPLUS (Continued).

arizonae Scudd., Proc. Bost. soc. nat. hist., xx, 64-65 (1879).

Arizona.

artemisiae Brun., Scudd., Proc. amer. phil. soc., xxxvi, 8, 33 (1897).

Idaho.

ascensus Scudd., Proc. Dav. acad. nat. sc., vii, 195, 196-197, pl. 9, fig. 3 (1899).

California, Oregon.

ater Scudd., Proc. amer. phil. soc., xxxvi, 17, 22, 32 (1897).

California.

atlanis Ril., Ann. rep. ins. Mo., vii, 169 (1875)—*Caloptenus*.

Scudd., Rep. U. S. ent. comm., ii, app., 24, pl. 17, fig. 6 (1881).

Hunt, Miss. ess. econ. ent. Ill., 120, 126 (1886)—*Pezotettix*.

spretus Pack. (nec Uhl.), Amer. nat., viii, 502 (1874)—*Caloptenus*.

atlantis Thom., Bull. Ill. mus. nat. hist., i, 68 (1876)—*Caloptenus*.

femur rubrum Prov. (nec De Geer), Nat. canad., viii, 109 110, fig. 12 (1876)—*Caloptenus*.

devastator (pars) Scudd., Proc. Bost. soc. nat. hist., xix, 285-286, 287-288 (1878).

bilituratus Brun. (nec Walk.), Rep. U. S. ent. comm., iii, 60 (1883)—*Caloptenus*.

Most of U. S. and Canada.

attenuatus Scudd., Proc. amer. phil. soc., xxxvi, 13, 34 (1897).

N. Carolina.

baconi McNeill, Psyche, viii, 345, 369-370 (1899).

Arkansas.

bilituratus Walk., Cat. Derm. salt. Brit. mus., iv, 679 (1870)—*Caloptenus*.

Caulf. (pars), Rep. ent. soc. Ont., xviii, 71 (1886).

Caulf. (pars), Can. rec. sc., ii, 401 (1887)—*Caloptenus* (*Melanoplus*).

?*scriptus* Cock., Trans. amer. ent. soc., xx, 337 (1894).

Montana to Oregon and British Columbia.

bispinosus Scudd., Proc. amer. phil. soc., xxxvi, 25, 34 (1897).

Texas.

bivittatus Say, Journ. acad. sc. Philad., iv, 308 (1825)—*Gryllus*.

Haan, Bijdr. kenn. Orth., 144 (1842)—*Acridium* (*Opsomala*).

Uhl. (pars), Say, Ent. N. A., ed. LeC., ii, 238 (1859)—*Caloptenus*.

Uhl. (pars), Harr., Ins. inj. veg., 3 ed., 174 (1862)—*Acridium* (*Caloptenus*).

- Thom., Trans. Ill. st. agric. soc., v, 449 (1865)—*Acridium*.
 Scudd. (pars), Hitchc., Rep. geol. N. H., i, 376 (1874).
 Stål, Bih. sv. vet.-akad. handl., v, no. 9, 14 (1878)—*Pezotettix*.
 ?*sumichrasti* Sauss., Rev. mag. zool., 1861, 160-161 (1861)—*Pezotettix*.
 Southern Canada to the Gulf except Atlantic States; Washington,
 British Columbia.
- blandus** Scudd., Proc. Dav. acad. nat. sci., vii, 161-162, pl. 7. fig. 3 (1899).
 California.
- blatchleyi** Scudd., Proc. amer. phil. soc., xxxvi, 15, 34 (1897).
occidentalis Brun. (nec Thom.), Can. ent., viii, 124 (1876)—*Pezotettix*.
viola Blatchl. (nec Thom.), Can. ent., xxvi, 243-244 (1894)—*Pezotettix*.
 Indiana to Nebraska and Minnesota.
- borckii** Stål, Orth. Eug. resa, 332 (1861)—*Acridium* (*Podisma*).
 Walk., Cat. Derm. salt. Brit. mus., iv, 718 (1870)—*Podisma*.
 Stål, Rec. Orth., i, 79 (1873)—*Pezotettix* (*Melanoplus*).
 Thom., Rep. U. S. geol. surv. terr., v, 149 (1873)—*Pezotettix*.
 Scudd., Rep. ent. soc. Ont., xxvi, 66 (1896).
 Wyoming to Washington.
- borealis** Fieb., Lotos, iii, 120 (1853)—*Caloptenus*.
 Caulf., Rep. ent. soc. Ont., xviii, 71 (1886).
septentrionalis Sauss., Rev. mag. zool., 1861, 159 (1861)—*Pezotettix*.
 ?*arcticus* Walk., Cat. Derm. salt. Brit. mus., iv, 681-682 (1870)—
Caloptenus.
 Arctic America.
- bowditchi** Scudd., Proc. Bost. soc. nat. hist., xx, 72 (1879).
 Kansas to New Mexico.
- bruneri** Scudd., Proc. amer. phil. soc., xxxvi, 19, 32 (1897).
extremus Brun. (nec Walk.), Can. ent., xvii, 18 (1885).
 Washington to Alberta and Nebraska.
- calidus** Scudd., Proc. Dav. acad. nat. sc., vii, 203-204 (1899).
 New Mexico.
- canonicus** Scudd., Proc. amer. phil. soc., xxxvi, 26, 34 (1897).
 Arizona.
- cinereus** Scudd., Proc. Bost. soc. nat. hist., xix, 288, 290 (1878).
 Ril., Stand. nat. hist., ii, 195 (1884)—*Caloptenus*.
 Mississippi River to Pacific.
- clypeatus** Scudd., Proc. Bost. soc. nat. hist., xix, 40 (1877)—*Caloptenus*.
 Scudd., Can. ent., xii, 75 (1880).
 Georgia.

MELANOPLUS (Continued).

- coccineipes** Scudd., Proc. amer. phil. soc., xxxvi, 26, 34 (1897).
minor Scudd., Bull. U. S. geol. surv. terr., ii, 261 (1876) (nec 1875)
 —Caloptenus.
devastator Scudd. (pars), Proc. Bost. soc. nat. hist., xix, 285-286,
 287-288 (1878).
 Ontario to Utah.
- collinus** Scudd., Proc. Bost. soc. nat. hist., xix, 285 (1878).
 Northeastern U. S.
- compactus** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 27, 34 (1897).
 Dakota, Nebraska.
- comptus** Scudd., Proc. amer. phil. soc., xxxvi, 26, 34 (1897).
 Minnesota to Nebraska.
- confusus** Scudd., Proc. amer. phil. soc., xxxvi, 29, 35 (1897).
 Kentucky.
- consanguineus** Scudd., Proc. amer. phil. soc., xxxvi, 21, 32 (1897).
 California.
- conspersus** Scudd., Proc. amer. phil. soc., xxxvi, 27, 34 (1897).
 Nebraska.
- corpulentus** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 27, 34 (1897).
 N. Mexico.
- cuneatus** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 17, 32 (1897).
 New Mexico, Arizona.
- cyanipes** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 25, 34 (1897).
 California.
- dawsoni** Scudd., Daws., Rep. geol. 49 par., 343 (1875)—Pezotettix.
 Scudd., Rep. ent. soc. Ont., xxvi, 64 (1896).
tellustris Scudd., Ann. rep. chief eng., 1876, 502 (1876)—Pezotettix.
abditus Dodge, Can. ent., ix, 113 (1877)—Pezotettix.
 Manitoba to Nebraska, west to Rocky Mts.
- dealbatus** Scudd., Proc. Dav. acad. nat. sc., vii, 190-192, pl. 8, fig.
 7, 8 (1899).
 California.
- debilis** Scudd., Proc. Dav. acad. nat. sc., vii, 196, 201-202, pl. 9, fig. 7
 (1899).
 Oregon.
- decorus** Scudd., Proc. amer. phil. soc., xxxvi, 13, 33 (1897).
 N. Carolina.
- defectus** Scudd., Proc. amer. phil. soc., xxxvi, 20, 32 (1897).
 Colorado.

deletor Scudd., Proc. Bost. soc. nat. hist., xvii, 475-476 (1875)—
Caloptenus.

Scudd., Cent. Orth., 84 (1879).

Gulf states.

devastator Scudd. (pars), Proc. Bost. soc. nat. hist., xix, 285-286,
287-288 (1878).

Ril., Bull. Div. ent. U. S. dep. agric., xxv, 28-30, fig. 6a-d, 7a-c,
(1891)—Caloptenus.

affinis Coq., Ins. life, i, 227 (1889).

Pacific states, Nevada, Arizona.

differentialis Uhl., Thom., Trans. Ill. st. agric. soc., v, 450 (1865)
—Acridium.

Walsh-Ril., Amer. ent., i, 16 (1868)—Caloptenus.

Walk., Cat. Derm. salt. Brit. mus., iv, 610 (1870)—Cyrtacanthacris.

Stål, Bih. sv. vet.-akad. handl., v, no. 9, 14 (1878)—Pezotettix.

Brun., Bull. Washb. coll., i, 139 (1885).

New Jersey to California, Wyoming to New Mexico and Texas.

diminutus Scudd., Proc. amer. phil. soc., xxxvi, 21, 32 (1897).

California.

discolor Scudd., Proc. Bost. soc. nat. hist., xx, 81-82 (1879)—Pezotettix.

Scudd., Proc. amer. phil. soc., xxxvi, 7, 32 (1897).

Texas.

dumicola Scudd., Proc. Bost. soc. nat. hist., xx, 76-77 (1879)—Pez-
otettix.

Scudd., Proc. amer. phil. soc., xxxvi, 15, 34 (1897).

Texas.

elongatus Scudd., Proc. amer. phil. soc., xxxvi, 18, 32 (1897).

Kansas to New Mexico.

excelsus Scudd., Proc. amer. phil. soc., xxxvi, 19, 32 (1897).

Colorado.

extremus Walk., Cat. Derm. salt. Brit. mus., iv, 681 (1870)—Caloptenus.

Brun., Can. ent., xvii, 18 (1885).

?*leucostoma* Kirby, Faun. bor. amer., iv, 250 (1837)—Locusta.

junius Dodge, Can. ent., viii, 9 (1876)—Pezotettix.

parvus Prov., Nat. canad., viii, 110 (1876)—Caloptenus.

Northernmost U. S. and Canada.

fasciatus Barnst., Walk., Cat. Derm. salt. Brit. mus., iv, 680 (1870)
—Caloptenus.

Caulf., Rep. ent. soc. Ont., xviii, 71 (1886).

borealis Scudd. (nec Fieb.), Can. nat., vii, 286 (1862)—Pezotettix.

MELANOPLUS (Continued).

rectus Scudd., Proc. Bost. soc. nat. hist., xix, 284, 285 (1878).

curtus Scudd., Ibid., xx, 70-71 (1879).

Northern half of N. America.

femoratus Burm., Handb. ent., ii, 638 (1838)—Caloptenus.

Haan, Bijdr. kenn. Orth., 144 (1842)—Acridium (Caloptenus).

Scudd., Proc. Bost. soc. nat. hist., xix, 285, 288 (1878).

Caulf., Can. rec. sc., ii, 401 (1887)—Caloptenus (Melanoplus).

milberti Serv., Orth., 649 (1839)—Acridium.

flavovittatus Harr., Ins. inj. veg., 140 (1841)—Acridium.

bivittatus Uhl., pars (nec Say), Say, Ent. N. A., ed. LeC., ii, 238 (1859)—Caloptenus.

edax Sauss., Rev. mag. zool., 1861, 161 (1861)—Pezotettix.

Hudson Bay to N. Carolina, Vancouver to southern California.

femur nigrum Scudd., Proc. Dav. acad. nat. sci., vii, 165-167, pl. 7, fig. 4 (1899).

Arizona.

femur rubrum DeGeer, Mém., iii, 498, pl. 42, fig. 5 (1773)—Acridium.

Goeze, Ent. beytr., ii, 115 (1778)—Gryllus (Locusta).

Burm., Handb. ent., ii, 638 (1838)—Caloptenus.

Haan, Bijdr. kenn. Orth., 143 (1842)—Acridium (Caloptenus).

Stål, Rec. Orth., i, 79 (1873)—Pezotettix (Melanoplus).

Scudd., Hitchc., Rep. geol. N. H., i, 375 (1874).

Stål, Bih. sv. vet.-akad. handl., v, no. 9, 13 (1878)—Pezotettix.

Caulf., Can. rec. sc., ii, 401 (1887)—Caloptenus (Melanoplus).

erythropus Gmel., Linn., Syst. nat., i, pt. iv, 2086 (1788)—Gryllus (Locusta).

femoralis Oliv., Encycl. méth., vi, 228 (1791)—Acridium.

devorator Scudd., Proc. Bost. soc. nat. hist., xvii, 474-475 (1875)—Caloptenus.

sanguinolentus Prov., Nat. canad., viii, 109 (1876)—Caloptenus.

atlantis Prov. (nec Ril.), Faune ent. can., ii, 35 (1877)—Caloptenus.

interior Scudd., Proc. Bost. soc. nat. hist., xx, 71-72 (1879).

Most of N. America.

flabellatus Scudd., Proc. Bost. soc. nat. hist., xx, 82-83 (1879)—Pezotettix.

Scudd., Proc. amer. phil. soc., xxxvi, 12, 33 (1897).

Texas.

flabellifer Scudd., Proc. Bost. soc. nat. hist., xx, 68-69 (1879).

occidentalis Towns. (nec Thom.), Ins. life, vi, 31 (1893).

Montana to New Mexico.

- flavescens** Scudd., Proc. amer. phil. soc., xxxvi, 17, 32 (1897).
California.
- flavidus** Scudd., Proc. Bost. soc. nat. hist., xx, 74 (1879).
cenchri McNeill, Psyche, vi, 74-75 (1891).
Illinois and Montana to Texas and Arizona.
- fluviatilis** Brun., Ann. rep. Nebr. bd. agric., 1896, 136-137, fig. 34 (1897).
Nebraska.
- foedus** Scudd., Proc. Bost. soc. nat. hist., xx, 69 (1879).
Idaho and Dakota to New Mexico.
- franciscanus** Scudd., Proc. Dav. acad. nat. sc., vii, 183-184, pl. 8, fig. 1, 2 (1899).
Arizona.
- furcatus** Scudd., Proc. amer. phil. soc., xxxvi, 30, 35 (1897).
Florida.
- fuscipes** McNeill, Scudd., Proc. amer. phil. soc., xxxvi, 12, 33 (1897).
California.
- gillettei** Scudd., Proc. amer. phil. soc., xxxvi, 8, 33 (1897).
Colorado.
- gladstoni** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 23, 33 (1897).
Assiniboia and Minnesota to Colorado.
- glaucipes** Scudd., Proc. Bost. soc. nat. hist., xvii, 476-477 (1875)—
Caloptenus.
Scudd., Can. ent., xii, 75 (1880).
Texas.
- gracilipes** McNeill, Scudd., Proc. amer. phil. soc., xxxvi, 11, 33 (1897).
California.
- gracilis** Brun., Can. ent., viii, 124 (1876)—Pezotettix.
Scudd., Proc. amer. phil. soc., xxxvi, 16, 35 (1897).
minutipennis Thom., Bull. Ill. mus. nat. hist., i, 66 (1876)—Pezotettix.
Indiana and Kentucky to Nebraska and Dakota.
- herbaceus** Brun., Bull. div. ent. U. S. dep. agric., xxviii, 25-26, fig. 13ab (1893).
Texas to Arizona.
- humphreysii** Thom. (pars), Rep. U. S. geol. surv. west 100 mer., v, 890 (1875)—Pezotettix.
Scudd., Proc. amer. phil. soc., xxxvi, 7, 33 (1897).
Arizona.
- huroni** Blatchl., Psyche, viii, 195-196 (1898).
Michigan.

MELANOPLUS (Continued).

- immunis** Scudd., Proc. Dav. acad. nat. sc., vii, 167, 170-171 (1899).
Oregon.
- impiger** Scudd., Proc. amer. phil. soc., xxxvi, 26, 34 (1897).
Minnesota to Texas.
- impudicus** Scudd., Proc. amer. phil. soc., xxxvi, 22, 32 (1897).
Georgia to Arkansas.
- incisus** Scudd., Proc. Dav. acad. nat. sc., vii, 162, 163-164 (1899).
Colorado.
- incultus** Scudd., Proc. Dav. acad. nat. sc., vii, 175, 181-182, pl. 7,
fig. 10 (1899).
Colorado.
- indigenus** Scudd., Proc. amer. phil. soc., xxxvi, 8, 33 (1897).
Idaho.
- infantilus** Scudd., Proc. Bost. soc. nat. hist., xx, 65-67 (1879).
Northern half of U. S. west of Mississippi River, western Canada.
- inops** Scudd., Proc. amer. phil. soc., xxxvi, 16, 35 (1897).
Florida.
- intermedius** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 20, 32 (1897).
Colorado to Washington.
- islandicus** Blatchl., Psyche, viii, 196-197 (1898).
abortivus Walk., Can. ent., xxx, 90-92 (1898).
Michigan, Ontario.
- juvencus** Scudd., Proc. amer. phil. soc., xxxvi, 9, 14, 34 (1897).
puer Scudd. (pars), Proc. Bost. soc. nat. hist., xix, 87 (1877)—Pezotettix.
Florida.
- keeleri** Thom., Bull. U. S. geol. surv. terr., i, no. 2, 69 (1874)—Cal-
optenus.
Scudd., Proc. amer. phil. soc., xxxvi, 29, 35 (1897).
tenebrosus Scudd., Proc. Bost. soc. nat. hist., xx, 63 (1879).
Southern states.
- kennicottii** Scudd., Proc. Bost. soc. nat. hist., xix, 287, 289, 290 (1878).
bilituratus Scudd. (nec Walk.), Daws., Rep. geol. 49 par., 343 (1875).
Montana to Alaska.
- lakinus** Scudd., Proc. Bost. soc. nat. hist., xx, 79-80 (1879)—Pezotettix.
Brun., Bull. div. ent. U. S. dep. agric., n. s., vii, 37 (1897).
Nebraska to New Mexico.
- lepidus** Scudd., Proc. amer. phil. soc., xxxvi, 15, 34 (1897).
Nevada, California.

ligneolus Scudd., Proc. Dav. acad. nat. sc., vii, 187, 188-190, pl. 8, fig. 5, 6 (1899).

California.

luridus Dodge, Can. ent., viii, 11 (1876)—*Caloptenus*.

Brun., Rep. U. S. ent. comm., ii, 60 (1883).

Northern half of U. S. west of Mississippi River.

mancus Smith, Proc. Portl. soc. nat. hist., i, 149 (1868)—*Pezotettix*.

Walk., Cat. Derm. salt. Brit. mus., v, 72 (1871)—*Podisma*.

Scudd., Rep. ent. soc. Ont., xxvi, 66 (1896).

New England ; Illinois?

marginatus Scudd., Ann. rep. chief eng., 1876, 504 (1876)—*Pezotettix*.

Scudd., Proc. amer. phil. soc., xxxvi, 16, 28, 35 (1897).

California.

militaris Scudd., Proc. amer. phil. soc., xxxvi, 9, 33 (1897).

Idaho.

minor Scudd., Proc. Bost. soc. nat. hist., xvii, 478 (1875)—*Caloptenus*.

Scudd., Cent. Orth., 84 (1879).

occidentalis Thom., Ann. rep. chief eng., 1878, 1845 (1878)—*Caloptenus*.

Northern half of U. S. and bordering parts of Canada.

missionum Scudd., Proc. amer. phil. soc., xxxvi, 12, 33 (1897).

California.

montanus Thom., Rep. U. S. geol. surv. terr., v, 155 (1873)—*Platyphyma*.

Scudd., Rep. ent. soc. Ont., xxvi, 66 (1896).

Montana.

monticola Brun., Scudd., Proc. amer. phil. soc., xxxvi, 23, 24, 34 (1897).

montanus Scudd. (nec Thom.), Appal., i, 263 (1878)—*Platyphyma*.

Colorado.

nanus Scudd., Proc. Dav. acad. nat. sc., vii, 187-188, pl. 8, fig. 4 (1899).

California.

nigrescens Scudd., Proc. Bost. soc. nat. hist., xix, 27 (1877)—*Caloptenus*.

Scudd., Cent. Orth., 84 (1879).

Scudd., Can. ent., xii, 75 (1880)—*Pezotettix*.

?*zimmermanni* Sauss., Rev. mag. zool., 1861, 159 (1861)—*Pezotettix*.
South Atlantic states.

obovatipennis Blatchl., Can. ent., xxvi, 241-243 (1894)—*Pezotettix*.

Scudd., Proc. amer. phil. soc., xxxvi, 14, 34 (1897).

MELANOPIUS (Continued).

- ?*longicornis* Sauss., Rev. mag. zool., 1861, 159, (1861)—Pezotettix.
rotundipennis Blatchl. (nec Scudd.), Can. ent., xxiii, 80 (1891)—
 Pezotettix.
 Indiana to Arkansas and Texas.
- occidentalis** Thom., Ann. rep. U. S. geol. surv. terr., v, 453, pl. 2,
 fig. 2 (1872)—Caloptenus.
 Brun., Publ. Nebr. acad. sc., iii, 28 (1893).
variolosus Scudd., Proc. Bost. soc. nat. hist., xx, 67-68 (1879).
 N. Dakota to New Mexico.
- olivaceus** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 31, 35 (1897).
 California.
- pacificus** Scudd., Rep. U. S. ent. comm., ii, app., 24-25, pl. 17, fig.
 16 (1881)—Pezotettix.
 Scudd., Proc. amer. phil. soc., xxxvi, 12, 33 (1897).
 California, Nevada.
- packardii** Scudd., Proc. Bost. soc. nat. hist., xix, 287 (1878).
fasciatus Scudd. (nec Walk.), Ibid., xvii, 477 (1875)—Caloptenus.
 Mississippi River to Pacific, western Canada.
- palmeri** Scudd., Proc. amer. phil. soc., xxxvi, 23, 33 (1897).
 New Mexico, Arizona.
- paroxyoides** Scudd., Proc. amer. phil. soc., xxxvi, 28, 35 (1897).
 Florida.
- phoetaliotiformis** Scudd., Proc. Dav. acad. nat. sc., vii, 175, 179-
 180, pl. 7, fig. 9 (1899).
 Minnesota to California.
- pictus** Brun., Scudd., Proc. amer. phil. soc., xxxvi, 18, 32 (1897).
 Arizona.
- pilatus** Scudd., Proc. Dav. acad. nat. sc., vii, 192-194, pl. 9, fig. 1, 2 (1899).
 Colorado.
- pinctus** Scudd., Proc. Dav. acad. nat. sc., vii, 174, 175-177, pl. 7,
 fig. 7 (1899).
 California.
- plebejus** Stål, Bih. sv. vet.-akad. handl., v, no 9, 12 (1878)—Pezotettix.
 Scudd., Proc. amer. phil. soc., xxxvi, 16, 35 (1897).
pupaeformis Scudd., Proc. Bost. soc. nat. hist., xx, 83-84 (1879)—
 Pezotettix.
 Texas.

plumbeus Dodge, Can. ent., ix, 112 (1877)—*Caloptenus*.

Brun., Bull. div. ent. U. S. dep. agric., xviii, 32-33, fig. 16 (1893).

Wyoming, Colorado, Nebraska, Kansas.

propinquus McNeill, Scudd., Proc. amer. phil. soc., xxxvi, 24, 34 (1897).

femur rubrum Scudd. (nec DeGeer), Proc. Bost. soc. nat. hist., xix, 86 (1877)—*Caloptenus*.

Southeastern U. S.

puer Scudd. (pars), Proc. Bost. soc. nat. hist., xix, 87 (1877)—*Pezotettix*.

Scudd., Proc. amer. phil. soc., xxxvi, 12, 33 (1897).

Florida.

punctulatus Uhl., Scudd., Best. journ. nat. hist., vii, 465 (1862)—*Caloptenus*.

Scudd., Hitchc., Geol. N. H., i, 376 (1874).

griseus Thom., Ann. rep. U. S. geol. surv. terr., v, 454 (1872)—*Caloptenus*.

helluo Scudd., Proc. Bost. soc. nat. hist., xvii, 476 (1875)—*Caloptenus*.

Maine to Virginia, Texas and Nebraska.

rileyanus McNeill, Scudd., Proc. amer. phil. soc., xxxvi, 7, 32 (1897).
California.

robustus Scudd., Proc. Bost. soc. nat. hist., xvii, 473 (1875)—*Caloptenus*.

Stål, Bih. sv. vet.-akad. handl., v, no. 9, 14 (1878)—*Pezotettix*.

Scudd., Cent. Orth., 84 (1879).

ponderosus Scudd., Proc. Bost. soc. nat. hist., xvii, 473 (1875)—*Caloptenus*.

Texas.

rotundipennis Scudd., Proc. Bost. soc. nat. hist., xix, 86-87 (1877)
—*Pezotettix*.

Scudd., Proc. amer. phil. soc., xxxvi, 14, 34 (1897).

Florida.

rusticus Stål, Bih. sv. vet.-akad. handl., v, no. 9, 13 (1878)—*Pezotettix*.

Scudd., Proc. amer. phil. soc., xxxvi, 11, 33 (1897).

Texas.

saltator Scudd., Proc. amer. phil. soc., xxxvi, 14, 34 (1897).

borckii Scudd. (nec Stål), Rep. U. S. ent. comm., ii, app., 24, pl. 17,
fig. 17 (1881)—*Pezotettix*.

scudderi Uhl., Proc. ent. soc. Philad., ii, 555 (1864)—*Pezotettix*.

Walk., Cat. Derm. salt. Brit. mus., iv, 718 (1870)—*Podisma*.

Scudd., Proc. amer. phil. soc., xxxvi, 8, 33 (1897).

unicolor Thom., Rep. U. S. geol. surv. terr., v, 151 (1873)—*Pezotettix*.

U. S. east of Great Plains.

MELANOPLUS (Continued).

sierranus Scudd., Proc. amer. phil. soc., xxxvi, 21, 32 (1897).

California.

silvaticus McNeill, Psyche, viii, 345, 368-369 (1899).

Arkansas.

simplex Scudd., Proc. amer. phil. soc., xxxvi, 7, 32 (1897).

Colorado.

snowi Scudd., Proc. amer. phil. soc., xxxvi, 15, 34 (1897).

N. Mexico.

spretus Uhl., Walsh, Pract. ent., ii, 1 (1866)—*Caloptenus*.

Stål, Bih. sv. vet.-akad. handl., v, no 9, 14 (1878)—*Pezotettix*.

Scudd., Proc. Bost. soc. nat. hist., xix, 287 (1878).

spretis Thom., Trans. Ill. st. agric. soc., v, 450 (1865)—*Acridium*.

Saskatchewan to Colorado; at times most of the U. S. west of the Mississippi; western Canada.

tenuipennis McNeill, Scudd., Proc. amer. phil. soc., xxxvi, 12, 33 (1897).

California.

terminalis Scudd., Proc. amer. phil. soc., xxxvi, 25, 34 (1897).

Texas.

texanus Scudd., Proc. Bost. soc. nat. hist., xx, 80-81 (1879)—*Pezotettix*.

Scudd., Proc. amer. phil. soc., xxxvi, 15, 34 (1897).

scudleri Brun. (nec Uhl.), Bull. Washb. coll., i, 136 (1885).

Kansas to Texas.

truncatus Scudd., Proc. Dav. acad. nat. sc., vii, 175, 177-179, pl. 7, fig. 8 (1899).

Arizona.

uniformis Scudd., Proc. amer. phil. soc., xxxvi, 22, 32 (1897).

devastator (pars) Scudd., Proc. Bost. soc. nat. hist., xix, 285-286, 287-288 (1878).

California.

usitatus Scudd., Proc. Dav. acad. nat. sc., vii, 168, 172-174 (1899).

Oregon.

utahensis Brun., Scudd., Proc. amer. phil. soc., xxxvi, 19, 32 (1897).

Utah.

validus Scudd., Proc. Dav. acad. nat. sc., vii, 195, 197-199, pl. 9, fig. 4, 5 (1899).

Oregon.

varicus Scudd., Proc. Dav. acad. nat. sc., vii, 167, 168 169, pl. 7, fig. 5, 6 (1899).

California.

- viola** Thom., Bull. Ill. mus. nat. hist., i, 68 (1876)—Pezotettix.
 Scudd., Proc. amer. phil. soc., xxxvi, 30, 35 (1897).
affiliatus Uhl., Scudd., Can. ent., xii, 75 (1880)—Pezotettix.
- virgatus** McNeill, Scudd., Proc. amer. phil. soc., xxxvi, 22, 32 (1897).
devastator (pars) Scudd., Proc. Bost. soc. nat. hist., xix, 285-286,
 287-288 (1878).
 California.
- viridipes** Walsh, Blatchl., Can. ent., xxiii, 80 (1891)—Pezotettix.
 Scudd., Proc. amer. phil. soc., xxxvi, 13, 33 (1897).
viridulus (*viridicrus*) McNeill, Psyche, vi, 75-76 (1891)—Pezotettix.
 Indiana, Illinois.
- walshii** Scudd., Proc. amer. phil. soc., xxxvi, 6, 11, 33 (1897).
 Michigan to Iowa.
- washingtonianus** Brun., Can. ent., xvii, 14-15 (1885)—Pezotettix.
 Scudd., Rep. ent. soc. Ont., xxvi, 66 (1896).
 Washington.
- yarrowi** Thom., Rep. U. S. geol. surv. west 100 mer., v, 894, pl. 45,
 fig. 5 (1875)—Caloptenus.
 Scudd., Proc. amer. phil. soc., xxxvi, 31, 35 (1897).
 Colorado.

PHOETALIOTES Scudder.

- nebrascensis** Thom., Ann. rep. U. S. geol. surv. terr., v, 455 (1872)
 —Pezotettix.
 Brun., Publ. Nebr. acad. sc., iii, 28 (1893)—Euprepocnemis.
 Scudd., Rep. ent. soc. Ont., xxvi, 63 (1896).
megacephala Thom., Dodge, Can. ent., iv, 15 (1872)—Pezotettix.
autumnalis Dodge, Can. ent., viii, 10 (1876)—Pezotettix.
sanguinocephalus La Mun., Proc. Nebr. ass. adv. sc., March 8, 1877
 —Caloptenus.
volucris Dodge, Can. ent., ix, 112' (1877)—Caloptenus.
 Rocky Mts. to Mississippi River.

PARONYA Scudder.

- atlantica** Scudd. (pars), Proc. Bost. soc. nat. hist., xix, 29, 88 (1877).
 Georgia, Florida.
- floridana** Thom., Bull. U. S. geol. surv. terr., i, no 2, 68 (1874)—
 Caloptenus.
 Smith, Cat. ins. N. J., 412 (1890).
atlantica Scudd. (pars), Proc. Bost. soc. nat. hist., xix, 29, 88 (1877).

PAROXYA (Continued).

recta Scudd., Ibid., xix, 30, 88 (1877).

Eastern U. S. and Gulf states.

hoosieri Blatchl., Can. ent., xxiv, 31-33 (1892)—Pezotettix.

Scudd., Proc. amer. acad. arts sc., xxxii, 205 (1897).

atlantica Blatchl. (nec Scudd.), Can. ent., xxv, 90 (1893).

Ohio, Indiana.

scudderi Blatchl., Can. ent., xxx, 59-60, 64 (1898).

Indiana.

POECILOTETTIX Scudder.

coccinatus Scudd., Rev. Mel., 386, 389-390, pl. 26, fig. 3 (1897).

California.

pantherinus Walk.,* Cat. Derm. salt. Brit. mus., iv, 623 (1870)—

Acridium.

picticornis Thom., Proc. Dav. acad. nat. sc., ii, 125, pl. 4, fig. 1, 2,

—Caloptenus (Hesperotettix).

Arizona.

sanguineus Scudd., Rev. Mel., 386, 387-389, pl. 26, fig. 2 (1897).

Arizona.

OEDALEONOTUS Scudder.

enigma Scudd., Ann. rep. chief eng., 1876, 505 (1876)—Pezotettix.

Scudd., Rev. Mel., 391-393, pl. 26, fig. 4-6 (1897).

juvundus Scudd., Ann. rep. chief eng., 1876, 505 (1876)—Pezotettix.

collaris Scudd., Proc. Bost. soc. nat. hist., xix, 286 (1878)—Melanoplus.

flavoannulatus Brun., Ins. life, iii, 140 (1890)—Melanoplus.

flavolineatus Brun. (nec Thom.), Bull. div. ent. U. S. dep. agric.,
xxviii, 33 (1893)—Caloptenus.

Pacific coast.

ASEMOPLUS Scudder.

montanus Brun., Can. ent., xvii, 16-17 (1885)—Bradynotes.

Scudd., Rep. ent. soc. Ont., xxvi, 65 (1896).

Montana to Washington.

nudus Walk., Can. ent., xxx, 197-199, pl. 6 (1898).

Alberta, British Columbia.

APTENOPEDES Scudder.

aptera Scudd., Proc. Bost. soc. nat. hist., xix, 86 (1877).

Gulf states.

* This determination I owe to the communication of Prof. L. Bruner.

rufovittata Scudd., Proc. Bost. soc. nat. hist., xix, 85 (1877).

Florida.

sphenarioides Scudd., Proc. Bost. soc. nat. hist., xix, 84 (1877).

Florida.

Dactyloti.

DACTYLOTUM Charpentier.

variegatum Scudd., Proc. Bost. soc. nat. hist., xx, 75 (1879)—Pezotettix.

Towns., Ins. life, vi, 30-31 (1893).

New Mexico to California.

pictum Thom., Proc. acad. nat. sc. Philad., 1870, 78 (1870)—Pezotettix.

Gerst., Stett. ent. zeit., xxxiv, 192 (1873).

Brun., Bull. div. ent. U. S. dep. agric., iv, 57 (1884)—Pezotettix (Dactylotum).

Colorado, southward.

LOCUSTIDAE.

PHANEROPTERINAE.

Odonturae.

DICHOPETALA Brunner.

emarginata Brunn., Monogr. Phaner., 77 (1878).

Texas.

Hormiliae.

HORMILIA Stål.

elegans Scudd. (See Appendix).

New Mexico.

ARETHAEA Stål.

constricta Brunn., Monogr. Phaner., 236 (1878).

Texas.

gracilipes Thom., Proc. acad. nat. sc. Philad., 1870, 76 (1870)—Ephippitytha.

Stål, Bih. sv. vet.-akad. handl., iv, no 5, 55 (1876).

grallator Scudd., Proc. Bost. soc. nat. hist., xix, 39 (1877)—Aegipan.

Kansas, Colorado, Texas, Arizona.

phalangium Scudd., Proc. Bost. soc. nat. hist., xix, 40 (1877)—Aegipan.

multiramosa Brunn., Monogr. Phaner., 235 (1878).

Georgia.

Steirodontia.

STILPNOCHLORA Stål.

marginella Serv., Orth., 405 (1839)—Phylloptera.

Stål, Öfv. vet.-akad. förh., xxx, no 4. 40 (1873).

thoracica Burm. (nec Serv.), Handb. ent., ii, 693 (1838)—Phylloptera.

couloniana Sauss., Rev. mag. zool., 1861, 128 (1861)—Phylloptera.

thoracica Scudd., Bost. journ. nat. hist., vii, 447 (1862)—Microcentrum. Name independent of Burmeister's.

Florida Keys.

PEUCESTES Stål.

dentatus Stål, Rec. Orth., ii, 45 (1874).

citrifolius Blanch. (nec Linn.), Hist. nat. ins., 24, pl. 7 (1840)—Phaneroptera.

Texas.

Scudderiae.

SCUDDERIA Stål.

curvicauda De Geer, Mém., iii, 446, pl. 38, fig. 3 (1773)—Locusta.

Goeze, Ent. beytr., ii, 98 (1778)—Gryllus (Tettigonia).

Scudd. (pars), Bost. journ. nat. hist., vii, 448 (1862)—Phaneroptera.

Stål, Öfv. vet.-akad. förh., xxx, 41 (1873).

angustifolia Harr., Ins. inj. veg., 129 (1841)—Phaneroptera.

furculata Beut. (nec Brunn.), Bull. amer. mus. nat. hist., vi, 275 (1894).

U. S. east of Great Plains.

furcata Brunn., Monogr. Phaner., 239, pl. 5, fig. 72a (1878).

?*myrtifolia* Drury (nec Linn.), Ill. nat. hist., ii, 78, pl. 41, fig. 2 (1773)—Gryllus (Locusta).

curvicauda Burm. (nec De Geer), Handb. ent., ii, 690 (1838)—Phaneroptera.

angustifolia Blatchl. (nec Harr.), Proc. Ind. acad. sc., 1892, 102-103 (1894).

fasciata Beut., Bull. amer. mus. nat. hist., vi, 276 (1894).

U. S. and southern Canada east of Great Plains.

furcifera Scudd., Proc. amer. acad. arts sc., xxxiii, 275, 276, 282-283, pl., fig. 7 (1898).

Arizona.

laticauda Brunn., Monogr. Phaner., 238-239 (1878).

Georgia, Florida, Texas.

mexicana Sauss., Rev. mag. zool., 1861, 129 (1861)—Phaneroptera.
 Scudd., Proc. amer. acad. arts sc., xxxiii, 274, 276, 280, pl., fig. 5 (1898).

furculata Brunn., Mon. Phaneropt., 239, pl. 5, fig. 72b (1878).

Oregon, California, Texas.

pistillata Brunn., Monogr. Phaner., 240-241 (1878).

curvicauda (pars) Scudd. (nec De Geer), Bost. journ. nat. hist., vii, 448 (1862).

furculata Blatchl. (nec Brunn.), Proc. Ind. acad. sc., 1892, 100-101 (1894).

Northern U. S. and Canada, east of Great Plains.

septentrionalis Serv., Orth., 416 (1839)—Phaneroptera.

Scudd., Proc. amer. acad. arts sc., xxxiii, 275, 276, 285-286, pl., fig. 9 (1898).

suturalis Heer, Insektenf. tert. Oen., ii, 4 (1849)—Phaneroptera.

curvicauda (pars) Scudd. (nec De Geer), Bost. journ. nat. hist., vii, 448 (1862)—Phaneroptera.

angustifolia Brunn. (nec Harr.), Monogr. Phaner., 241 (1878).

truncata Beut., Bull. amer. mus. nat. hist., vi, 252 (1894).

Atlantic states.

texensis Sauss.-Pict., Biol. centr. amer., Orth., 328, 329, 330, pl. 15, figs. 18, 19 (1897).

curvicauda Blatchl. (nec De Geer), Proc. Ind. acad. sc., 1892, 99-100 (1894).

U. S. east of Great Plains.

SYMMETROPLEURA Brunner.

modesta Brunn., Monogr. Phaner., 246 (1878).

N. Carolina.

PLATYLYRA Scudder.

californica Scudd., Proc. amer. acad. arts sc., xxxiii, 288-289 (1898).
 California.

Amblycoryphae.

AMBLYCORYPHA Stål.

huasteca Sauss., Rev. mag. zool., 1859, 205 (1859)—Phylloptera (Orophus).

Walk., Cat. Derm. salt. Brit. mus., ii, 382 (1869)—Orophus.

Brunn., Monogr. Phaner., 266 (1878).

caudata Scudd., Bost. journ. nat. hist., vii, 445 (1862)—Phylloptera.
 Texas, Louisiana.

AMBLYCORYPHA (Continued).

- oblongifolia** De Geer, Mém., iii, 445, pl. 38, fig. 2 (1773)—*Locusta*.
 Goeze, Ent. beytr., ii, 98 (1778)—*Gryllus* (*Tettigonia*).
 Burm., Handb. ent., ii, 693 (1838)—*Phylloptera*.
 De Haan, Bijdr. kenn. Orth., 178 (1842)—*Locusta* (*Phylloptera*).
 Walk., Cat. Derm. salt. Brit. mus., ii, 381 (1869)—*Orophus*.
 Stål, Rec. Orth., ii, 42 (1874).
 Caulf., Can. rec. sc., ii, 396 (1887)—*Phylloptera* (*Amblycorypha*).
 Northern U. S. and Canada, east of Great Plains.
- parvipennis** Stål, Bih. sv. vet.-akad. handl., iv, no 5, 58 (1876).
 Texas.
- rotundifolia** Scudder., Bost. journ. nat. hist., vii, 445 (1862)—*Phylloptera*.
 Walk., Cat. Derm. salt. Brit. mus., ii, 382 (1869)—*Orophus*.
 Scudder., Proc. Bost. soc. nat. hist., xix, 83 (1877).
oblongifolia Harr. (nec De Geer), Hitchc., Rep. geol. Mass., 582 (1833)—*Gryllus* (*Pterophylla*).
 U. S. east of Great Plains.
- scudderi** Brun., Can. ent., xxiii, 73 (1891).
 Nebraska.
- uhleri** Stål, Bih. sv. vet.-akad. handl., iv, no 5, 57 (1876).
 New Jersey to Minnesota and Texas.

Microcentra.

MICROCENTRUM Scudder.

- laurifolium** Linn., Syst. nat., 10 ed., i, 429 (1758)—*Gryllus* (*Tettigonia*).
 Fabr., Syst. ent., 282 (1775)—*Locusta*.
 Serv., Orth., 404 (1839)—*Phylloptera*.
 Haan, Bijdr. kenn. Orth., 178 (1842)—*Locusta* (*Phylloptera*).
 Walk., Cat. Derm. salt. Brit. mus., ii, 382 (1869)—*Orophus*.
 Stål, Rec. Orth., ii, 42 (1874).
fol. lauri Linn., Mus. Adolph. Fred., 83 (1754)—*Gryllus*.
rhombifolium Saus., Rev. mag. zool., 1859, 204 (1859)—*Phylloptera* (*Orophus*).
affiliatum Scudder., Bost. journ. nat. hist., vii, 447 (1862).
 U. S. east of Rocky Mts.
- retinerve** Burm., Handb. ent., ii, 692 (1838)—*Phylloptera*.
 Haan, Bijdr. kenn. Orth., 178 (1842)—*Locusta* (*Phylloptera*).

Scudd., Bost. journ. nat. hist., vii, 446 (1862).

Davis, Rep. ent. soc. Ont., xviii, 43 (1886)—*Amblycorypha*.

salicifolium Sauss., Rev. mag. zool., 1859, 204 (1859)—Phylloptera (Orophus).

totonacum Sauss., Ibid., 1859, 204 (1859)—Phylloptera (Orophus).
U. S. east of Great Plains.

PSEUDOPHYLLINAE.

BLIASTES Stål.

sp. indet. Scudd., Psyche, viii, 71 (1897).

Introduced: Missouri.

CYRTOPHYLLUS Burmeister.

perspicillatus Linn., Cent. ins. rar., 15 (1763)—*Gryllus*.

Linn., Amoen. acad., vi, 398 (1763)—*Gryllus* (*Locusta*).

Fabr., Syst. ent., 283 (1775)—*Locusta*.

Goeze, Ent. beytr., ii, 93 (1778)—*Gryllus* (*Tettigonia*).

Burm., Handb. ent., ii, 697 (1838).

Haan, Bijdr. kenn. Orth., 178 (1842)—*Locusta* (*Cyrtophyllus*).

hypericifolius Stoll', Répr. Spectres, Reg., 10, pl. 3a, fig. 9 (1813)
—*Gryllus* (*Tettigonia*).

concarvus Harr., Encycl. amer., viii, 42 (1835)—*Pterophyllum*.

zimmermanni Sauss., Rev. mag. zool., 1859, 206 (1859)—*Platyphyllum*.
U. S. east of Rocky Mts.

CONOCEPHALINAE.

Conocephalini.

COPIOPHORA Serville.

mucronata Thom., Glov., Rep. U. S. dep. agric., 1871, 80, fig. 14
(1871)—undescribed.

Thom., Can. ent., iv, 16 (1872).

Introduced: District of Columbia.

BELOCEPHALUS Scudder.

subapterus Scudd., Proc. Bost. soc. nat. hist., xvii, 459 (1875).
Florida.

PYRGOCORYPHA Stål.

uncinata Harr., Ins. inj. veg., 132 (1841)—*Conocephalus*.

Redt., Verh. zool.-bot. ges. Wien, 1891, 373 (1891).

N. Carolina to Texas.

CONOCEPHALUS Thunberg.

- acutulus** Scudd., Proc. Bost. soc. nat. hist., xx, 89 (1879).
California
- atlanticus** Brun., Ent. news, x, 38-39 (1899).
New Jersey to Virginia.
- attenuatus** Scudd., Rep. U. S. geol. surv. Nebr., 249 (1871).
Iowa, Nebraska.
- crepitans** Scudd., Bost. journ. nat. hist., vii, 450 (1862.)
Iowa to Texas.
- ensiger** Harr., Ins. inj. veg., 131 (1841).
? *acuminatus* Stoll', Répr. spectr., Saut. à sabr., 18, 19, pl. 8a, fig. 27-29 (1787-1813)—*Gryllus* (*Tettigonia*).
Northern U. S. east of Rocky Mts.
- exiliscanorus** Davis, Rep. ent. soc. Ont., xviii, 43 (1886).
New York.
- fuscostriatus** Redt., Verh. zool.-bot. ges. Wien, 1891, 399 (1891).
Southern U. S. east of Rocky Mts
- malivolans** Scudd., Proc. Bost. soc. nat. hist., xx, 90 (1879).
Florida.
- mexicanus** Sauss., Rev. mag. zool., 1859, 208 (1859).
? *aries* Scudd., Proc. Bost. soc. nat. hist., xx, 91 (1879).
Georgia to Texas.
- nebrascensis** Brun., Can. ent., xxiii, 72-73 (1891).
Upper Mississippi Valley.
- nietoi** Sauss., Rev. mag. zool., 1859, 208 (1859).
hebes Scudd., Proc. Bost. soc. nat. hist., xx, 92 (1879).
Texas, Louisiana.
- obscurellus** Redt., Verh. zool.-bot. ges. Wien, 1891, 397-398 (1891).
Louisiana.
- palustris** Blatchl., Can. ent., xxv, 89-90 (1893).
Indiana.
- retusus** Scudd., Proc. Bost. soc. nat. hist., xx, 93 (1879).
? *gladiator* Redt., Verh. zool.-bot. ges. Wien, 1891, 406 (1891).
Georgia; New Jersey?
- robustus** Scudd., Bost. journ. nat. hist., vii, 449 (1862).
Northern U. S. east of Rocky Mts.
- triops** Linn., Syst. nat., 10 ed., i, 430 (1758)—*Gryllus* (*Tettigonia*).
Fabr., Syst. ent., 285 (1775)—*Locusta*.
Thunb., Mém. acad. St. Petersburg., v, 272 (1815).

obtus Burm., Handb. ent., ii, 705 (1838).

dissimilis Serv., Orth., 518 (1839).

U. S. east of Great Plains, except northward.

Xiphidiini.

ORCHELIMUM Serville.

agile De Geer, Mém., iii, 457, pl. 40, fig. 3 (1773)—*Locusta*.

Goeze, Ent. beytr., ii, 99 (1778)—*Gryllus* (*Tettigonia*).

Turt., Syst. nat. Linn., ii, 555 (1806)—*Gryllus* (*Locusta*).

Harr., Hitchc., Rep. geol. Mass., 582 (1833)—*Gryllus* (*Pterophylla*).

Burm., Handb. ent., ii, 707 (1838)—*Xiphidium*.

Haan, Bijdr. kenn. Orth., 178 (1842)—*Locusta* (*Xiphidium*).

Scudd., Bost. journ. nat. hist., vii, 453 (1862).

Redt., Verh. zool.-bot. ges. Wien, 1891, 500-501 (1891)—*Xiphidium* (*Orchelimum*).

glaucum Serv., Orth., 524 (1839).

vulgare Harr., Ins. inj. veg., 130 (1841).

U. S. and Canada, from Rocky Mts. to Atlantic.

bruneri Blatchl., Can. ent., xxv, 92-93 (1893).

Indiana.

campestre Blatchl., Can. ent., xxv, 91-92 (1893).

Indiana, Minnesota.

cuticulare Redt., Verh. zool.-bot. ges. Wien, 1891, 503 (1891)—*Xiphidium* (*Orchelimum*).

Texas.

delicatum Brun., Ent. news, iii, 264-265 (1892).

Nebraska.

glaberrimum Burm., Handb. ent., ii, 707 (1838)—*Xiphidium*.

Haan, Bijdr. kenn. Orth., 178 (1842)—*Locusta* (*Xiphidium*).

Scudd., Bost. journ. nat. hist., vii, 453 (1862).

Redt., Verh. zool.-bot. ges. Wien, 1891, 501 (1891)—*Xiphidium* (*Orchelimum*).

U. S. from Rocky Mts. eastward.

gladiator Brun., Can. ent., xxiii, 71-72 (1891).

Nebraska.

herbaceum Serv., Orth., 524 (1839).

concinnum Scudd., Bost. journ. nat. hist., vii, 452 (1862).

Massachusetts to Nebraska.

indianense Blatchl., Can. ent., xxv, 90-91 (1893).

Indiana.

ORCHELIMUM (Continued).

laticauda Redt., Verh. zool.-bot. ges. Wien, 1891, 504 (1891)—Xiphidium (Orchelimum).

Louisiana.

longipenne Scudd., Bost. journ. nat. hist., vii, 453 (1862).

Osborne, Proc. Iowa acad. sc., i, pt. 2, 119 (1892).—Xiphidium.

inermis Redt., Verh. zool.-bot. ges. Wien, 1891, 501-502 (1891)—Xiphidium (Orchelimum).

Iowa to Texas.

minor Brun., Can. ent., xxiii, 72 (1891).

District of Columbia.

nigripes Scudd., Proc. Bost. soc. nat. hist., xvii, 459 (1875).

Redt., Verh. zool.-bot. ges. Wien, 1891, 502-503 (1891)—Xiphidium (Orchelimum).

Garm., Orth. Ky., 7 (1894)—Xiphidium.

Rocky Mts. to Mississippi River.

nitidum Redt., Verh. zool.-bot. ges. Wien, 1891, 503 (1891)—Xiphidium (Orchelimum).

Georgia.

robustum Redt., Verh. zool.-bot. ges. Wien, 1891, 499-500 (1891)—Xiphidium (Orchelimum).

Brun., Publ. Nebr. acad. sc., iii, 30 (1893).

Nebraska to Louisiana.

silvaticum McNeill, Psyche, vi, 26 (1891).

Illinois, Indiana.

spinulosum Redt., Verh. zool.-bot. ges. Wien, 1891, 503-504 (1891)—Xiphidium (Orchelimum).

North Carolina.

volantum McNeill, Psyche, vi, 26-27 (1891).

Illinois.

XIPHIDIUM Serville.

attenuatum Scudd., Trans. amer. ent. soc., ii, 305 (1869).

Indiana to Nebraska and Minnesota.

brevipenne Scudd., Can. nat., vii, 285 (1862).

U. S. and Canada from Rocky Mts. to Atlantic.

ensiferum Scudd., Bost. journ. nat. hist., vii, 451 (1862).

Mississippi Valley.

fasciatum De Geer, Mém., iii, 458, pl. 40, fig. 4 (1773)—Locusta.

Goeze, Ent. beytr., ii, 99 (1778)—Gryllus (Tettigonia).

Turt., Syst. nat. Linn., ii, 555 (1806)—*Gryllus* (*Locusta*).

Serv., Ann. sc. nat., xxii, 159 (1831).

Harr., Hitchc., Rep. geol. Mass., 582 (1833)—*Gryllus* (*Pterophylla*).

Ashm., Ins. life, vii, 26 (1894)—*Orchelimum*.

cinereum Thunb., Mém. acad. St. Petersb., v, 273 (1815)—*Conocephalus*).

gracile Harr., Ins. inj. veg., 131 (1841)—*Orchelimum*.

U. S. and Canada from Rocky Mts. to Atlantic.

gossypii Scudd., Proc. Bost. soc. nat. hist., xvii, 462 (1875).

Ashm., Ins. life, vii, 26 (1894)—*Orchelimum*.

Nebraska to Texas and Mississippi.

lanceolatum Brun., Can. ent., xxiii, 59 (1891).

Iowa.

memorale Scudd., Proc. Bost. soc. nat. hist., xvii, 462 (1875).

curlipenne Redt., Verh. zool.-bot. ges. Wien, 1891, 522 (1891).

Upper Mississippi Valley.

nigroleura Brun., Can. ent., xxiii, 58-59 (1891).

New York to Nebraska and Minnesota.

saltans Scudd., Rep. U. S. geol. surv. Nebr., 249 (1871).

modestum Brun., Can. ent., xxiii, 56-57 (1891).

laeniatum Redt., Verh. zool.-bot. ges. Wien, 1891, 520 (1891).

Rocky Mts. to Mississippi.

scudderi Blatchl., Can. ent., xxiv, 26-27 (1892).

Indiana.

strictum Scudd., Proc. Bost. soc. nat. hist., xvii, 460 (1875).

Mississippi Valley.

DECTICINAE.

ENGONIASPIS Brunner.

testacea Scudd. (See Appendix.)

Missouri.

ATLANTICUS Scudder.

dorsalis Burm., Handb. ent., ii, 713 (1838)—*Decticus*.

Haan, Bijdr. kenn. Orth., 178 (1842)—*Locusta* (*Ephippigera*).

Scudd., Bost. journ. nat. hist., vii, 454 (1862)—*Thyreonotus*.

Scudd., Can. ent., xxvi, 179, 180, 183 (1894).

Atlantic states, Indiana.

gibbosus Scudd., Can. ent., xxvi, 180 (1894).

N. Carolina to Florida.

ATLANTICUS (Continued).

pachymerus Burm., Handb. ent., ii, 712 (1838)—Decticus.

Haan, Bijdr. kenn. Orth., 178 (1842)—Locusta (Ephippigera).

Scudd., Bost. journ. nat. hist., vii, 453 (1862)—Thyreonotus.

Scudd., Can. ent., xxvi, 179, 180, 183 (1894).

Ball, Proc. Iowa acad. sc., iv, 237 (1897)—Pterolepis.

derogatus Walk., Cat. Derm. salt. Brit. mus., ii, 260 (1869)—Decticus.

U. S. east of Great Plains.

CAPNOBOTES Scudder.

bruneri Scudd., Can. ent., xxix, 74 (1897).

California.

fuliginosus Thom., Ann. rep. U. S. geol. surv. terr., v, 443, pl. 1, fig. 9 (1872)—Locusta.

Scudd., Can. ent., xxix, 74 (1897).

Arizona.

occidentalis Thom., Ann. rep. U. S. geol. surv. terr., v, 444, pl. 2, fig. 16 (1872)—Locusta.

Scudd., Can. ent., xxix, 74 (1897).

Utah, Nevada, California.

APOTE Scudder.

notabilis Scudd., Can. ent., xxix, 73 (1897).

Oregon.

ORCHESTICUS Saussure.

americanus Sauss., Rev. mag. zool., 1859, 201 (1859).

Tennessee.

cragini Brun., Bull. Washb. coll., i, 129 (1885)—Thyreonotus.

Scudd., Can. ent., xxvi, 180, 183 (1894).

Nebraska to Texas.

haldemanii Gir., Marcy, Expl. Red River, 259, pl. 15, fig. 5-8 (1853)—Anabrus.

Thom., Ann. rep. U. S. geol. surv. terr., v, 441 (1872)—Pterolepis.

Brun., Publ. Nebr. acad. sc., iii, 31 (1893)—Thyreonotus.

Scudd., Can. ent., xxvi, 180, 183 (1894).

Wyoming to Arkansas.

minutus Thom., Proc. acad. nat. sc. Philad., 1870, 75 (1870)—Anabrus.

Thom., Ann. rep. U. S. geol. surv. terr., v, 441 (1872)—Pterolepis.

Scudd., Can. ent., xxvi, 180, 183 (1894).

Nebraska, Colorado, New Mexico.

scudderi Brun., Bull. Washb. coll., i, 129-130 (1885)—Thyreonotus.

Scudd., Can. ent., xxvi, 180, 183 (1894).

Kansas, Nebraska.

stevensoni Thom., Proc. acad. nat. sc. Philad., 1870, 75 (1870)—*Anabrus*.

Thom., Ann. rep. U. S. geol. surv. terr., v, 441 (1872)—*Pterolepis*.

Scudd., Can. ent., xxvi, 180, 183 (1894).

Colorado, New Mexico.

TROPIZASPIS Brunner.

castanea Scudd., Proc. amer. acad. arts sc., xxxv, 85, 86-87 (1899).

California.

diabolica Scudd., Proc. amer. acad. arts sc., xxxv, 86, 88-89 (1899).

California.

ovata Scudd., Proc. amer. acad. arts sc., xxxv, 85, 86 (1899).

California.

picturata Scudd., Proc. amer. acad. arts sc., xxxv, 85, 87-88 (1899).

Washington.

steindachneri Herm., Verh. zool.-bot. ges. Wien, xxiv, 204, pl. 6, fig. 98-102 (1874)—*Arytropteris*.

Scudd., Can. ent., xxvi, 180, 183 (1894).

Pacific Coast, Texas; Nebraska?

ANABRUS Haldeman.

coloradus Thom., Ann. rep. U. S. geol. surv. terr., v, 440 (1872).

Manitoba, Nebraska, Kansas, Colorado, New Mexico, Texas.

purpurascens Uhl., Proc. ent. soc. Philad., ii, 550 (1864).

Thom., Proc. acad. nat. sc. Philad., 1870, 76 (1870)—*Thamnotrizon*.

similis Scudd., Rep. U. S. geol. surv. Nebr., 249 (1872).

Washington and Manitoba south through Rocky Mts. to Texas.

simplex Hald., Stansb., Expl. Utah, 372, pl. 10, fig. 4 (1852).

Rocky Mts. to Sierra Nevadas.

PERANABRUS Scudder.

scabricollis Thom., Ann. rep. U. S. geol. surv. terr., v, 441, (1872)
—*Thamnotrizon*.

Scudd., Can. ent., xxvi, 181, 183 (1894).

Montana.

CACOPTERIS Scudder.

aequalis Scudd., Proc. amer. acad. arts sc., xxxv, 90, 94 (1899).
California.

femorata Scudd., Proc. amer. acad. arts sc., xxxv, 90, 95 (1899).
California.

fuscopunctata Scudd., Proc. amer. acad. arts sc., xxxv, 90, 91-92
(1899).
California.

inermis Scudd., Proc. amer. acad. arts sc., xxxv, 90, 91 (1899).
Western Nevada.

nevadensis Scudd., Proc. amer. acad. arts sc., xxxv, 90, 93-94 (1899).
Nevada.

sinuata Scudd., Proc. amer. acad. arts sc., xxxv, 90, 92 (1899).
Arizona.

EREMOPEDES Scudder.

scudderi Cock., Ann. mag. nat. hist., (7), ii, 323-324 (1898).
New Mexico.

unicolor Scudd. (See Appendix.)
Arizona.

IDIOSTATUS Pictet.

bilineatus Thom., Rep. U. S. geol. surv. west 100 mer., v, 905 (1875)
—*Steiroxys*.

Scudd., Can. ent., xxvi, 181, 183 (1894).
Arizona?, California.

hermani Thom., Rep. U. S. geol. surv. west 100 mer., v, 904, pl. 44,
fig. 4 (1875)—*Steiroxys*.

Scudd., Can. ent., xxvi, 181, 183 (1894).

californicus Pict., Mém. soc. phys. hist. nat. Gen., xxx, pt. 6, 64-65,
pl. 3, figs. 35, 35ab (1888).

Yellowstone Park, California.

STEIROXYS Herman.

borealis Scudd., Can. ent., xxvi, 182 (1894).
Alberta, Oregon, California.

pallidipalpus Thom., Ann. rep. U. S. geol. surv. terr., v, 442 (1872)
—*Decticus*.

Scudd., Can. ent., xxvi, 182, 183 (1894).
Utah, Nevada, Idaho.

trilineata Thom., Proc. acad. nat. sc. Philad., 1870, 76 (1870)—
Thamnotrizon.

Thom., Ann. rep. U. S. geol. surv. terr., v, 443 (1872)—Decticus.

Herm., Verh. zool.-bot. ges. Wien, xxiv, 207, pl. 5, fig. 64-69 (1874).

Wyoming, Utah, Colorado, New Mexico.

IDIONOTUS Scudder.

brunneus Scudd. (See Appendix.)

California.

CLINOPLEURA Scudder.

melanopleura Scudd., Ann. rep. chief eng., 1876, 500 (1876)—Steir-
oxys.

Scudd., Can. ent., xxvi, 182, 183 (1894).

California, Utah.

PLAGIOSTIRA Scudder.

albonotata Scudd., Ann. rep. chief eng., 1876, 501 (1876).

New Mexico.

ATELOPLUS Scudder.

notatus Scudd. (See Appendix.)

California.

GRYLLACRINAE.

CAMPTONOTUS Uhler.

carolinensis Gerst., Arch. naturg., xxvi, 276 (1860)—Gryllacris.

Brunn., Monogr. Stenop., 137 (1888)—Neortus.

scudderi Uhl., Proc. ent. soc. Philad., ii, 549 (1864).

Maryland to Carolina.

STENOPELMATINAE.

(*Stenopelmatini.*)

Stenopelmati.

STENOPELMATUS Burmeister.

californicus Brunn., Monogr. Stenop., 17, fig. 1abc (1888).

British Columbia to California.

fasciatus Thom., Ann. rep. U. S. geol. surv. terr., v, 434 (1872).

Idaho.

histrion Sauss., Rev. mag. zool., 1859, 210 (1859).

California.

STENOPALMATUS (Continued).

irregularis Brunn., Monogr. Stenop., 17 (1888).

Arizona, California, Nevada.

longispina Brunn., Monogr. Stenop., 16-17, fig. 1d (1888).

British Columbia to California.

oculatus Scudd., Bull. U. S. geol. surv. terr., ii, 261 (1876).

hydrocephalus Brunn., Monogr. Stenop., 17-18 (1888).

U. S. west of 100th meridian.

pictus Scudd., Can. ent., xxxi, 114, 116-117 (1899).

California.

Anostostomata.

CYPHODERRIS Uhler.

monstrosa Uhl., Proc. ent. soc. Philad., ii, 552 (1864).

Oregon to Wyoming, Alberta.

*(Rhaphidophorini.)**Rhaphidophorae.*

DIESTRAMMENA Brunner.

marmorata Haan, Bijdr. kenn. Orth., 217 (1842)—*Locusta* (*Rhaphidophorus*).

Brunn., Monogr. Stenop., 55, fig. 26 (1888).

Introduced: Minnesota.

Tropidischiae.

TROPIDISCHIA Scudder.

xanthostoma Scudd., Proc. Bost. soc. nat. hist., viii, 12 (1861)—*Rhaphidophora*.

Scudd., Bost. journ. nat. hist., vii, 411 (1862).

Oregon, California.

Ceuthophili.

HADENOECUS Scudder.

cavernarum Sauss., Ann. soc. ent. France, (4), i, 492 (1860)—*Rhaphidophora*.

Scudd., Proc. Bost. soc. nat. hist., xii, 409 (1869).

subterraneus Scudd., Proc. Bost. soc. nat. hist., viii, 8 (1861)—*Rhaphidophora*.

Scudd., Bost. journ. nat. hist., vii, 441 (1862).

Caves of Kentucky, Tennessee and Virginia.

puteanus Scudd., Proc. Bost. soc. nat. hist., xix, 37 (1877).

N. Carolina, Mississippi.

CEUTHOPHILUS Scudder.

agassizii Scudd., Proc. Bost. soc. nat. hist., viii, 11 (1861)—*Rhaphidophora*.

Scudd., Bost. journ. nat. hist., vii, 439 (1862).

zonarius Walk., Cat. Derm. salt. Brit. mus., i, 203 (1869).

British Columbia, Washington.

alpinus Scudd., Proc. amer. acad. arts sc., xxx, 30, 78-79 (1894).
Colorado.

arizonensis Scudd., Proc. amer. acad. arts sc., xxx, 26, 52-53 (1894).
Utah, Arizona, New Mexico.

bicolor Scudd., Proc. amer. acad. arts sc., xxx, 28, 72-73 (1894).
Kentucky.

blatchleyi Scudd., Proc. amer. acad. arts sc., xxx, 26, 57-58 (1894).
uhleri Blatchl. (nec Scudd.), Proc. Ind. acad. arts sc., 1892, 144-145 (1894).

New York, Indiana, Minnesota, Iowa.

brevipes Scudd., Bost. journ. nat. hist., vii, 434 (1862).
New Brunswick to Indiana.

bruneri Scudd., Proc. amer. acad. arts sc., xxx, 29, 79-80 (1894).
divergens Osb. (nec Scudd.), Proc. Iowa acad. sc., i, ii, 119 (1892).
Iowa to Texas.

caecus Scudd., Proc. amer. acad. arts sc., xxx, 28, 60-61 (1894).
Kentucky, Missouri.

californianus Scudd., Bost. journ. nat. hist., vii, 438 (1862).
castaneus Thom., Ann. rep. U. S. geol. surv. terr., v, 435 (1872).
denticulatus Scudd., Ann. rep. U. S. geol. surv. west 100 mer., 1876, 279 (1876).

Oregon, California, Utah, Arizona.

celatus Scudd., Proc. amer. acad. arts sc., xxx, 26, 48-49 (1894).
British Columbia to California.

corticicola Scudd., Proc. amer. acad. arts sc., xxx, 25, 41-42 (1894).
Texas.

crassus Scudd., Proc. amer. acad. arts sc., xxx, 30, 85-86 (1894).
Southwestern states.

CEUTHOPHILUS (Continued).

- devius** Scudd., Proc. amer. acad. arts sc., xxx, 30, 99-100 (1894).
Kansas, Nebraska, Upper Missouri River.
- discolor** Scudd., Proc. amer. acad. arts sc., xxx, 29, 88-90 (1894).
Kansas, Nebraska.
- divergens** Scudd., Bost. journ. nat. hist., vii, 436 (1862).
Nebraska.
- ensifer** Pack., Amer. nat., xv, 882, pl. 7, figs. 4, 4ab (1881).
Tennessee.
- fusiformis** Scudd., Proc. amer. acad. arts sc., xxx, 28, 62-63 (1894).
Nebraska.
- gracilipes** Hald., Proc. amer. ass. adv. sc., ii, 346 (1850)—Phalangopsis.
Scudd., Proc. Bost. soc. nat. hist., viii, 7 (1861)—Rhaphidophora.
Scudd., Bost. journ. nat. hist., vii, 439 (1862).
Eastern U. S., Manitoba.
- grandis** Scudd., Proc. amer. acad. arts sc., xxx, 24, 38-39 (1894).
Tennessee, New York.
- henshawi** Scudd., Proc. amer. acad. arts sc., xxx, 30, 97-99 (1894).
British Columbia to California.
- heros** Scudd., Proc. amer. acad. arts sc., xxx, 26, 54-56 (1894).
New York to N. Carolina.
- inquinatus** Scudd., Proc. amer. acad. arts sc., xxx, 27, 87-88 (1894).
divergens (pars) Brun. (nec Scudd.), Publ. Nebr. acad. sc., iii, 32 (1893).
Nebraska.
- lapidicola** Burm., Handb. ent., ii, 723 (1838)—Phalangopsis.
Haan, Bijdr. kenn. Orth., 178 (1842)—Locusta (Rhaphidophorus).
Scudd., Proc. amer. acad. arts sc., xxx, 26, 50-51 (1894).
New York to S. Carolina.
- latebricola** Scudd., Proc. amer. acad. arts sc., xxx, 24, 37-38 (1894).
Pennsylvania to W. Virginia and Kentucky.
- latens** Scudd., Bost. journ. nat. hist., vii, 437 (1862).
New York to Texas.
- latibuli** Scudd., Ins. life, vi, 313-314 (1894).
Georgia, Florida.
- maculatus** Harr., Ins. inj. veg., 126 (1841)—Rhaphidophora.
Harr., Ibid., 2d ed., 137 (1852)—Phalangopsis.
Scudd. (pars), Bost. journ. nat. hist., vii, 434 (1862).

lapidicola Uhl. (nec Burm.), Harr., Ins. inj. veg., 3d ed., 155 (1862)
—Phalangopsis.

Northern U. S. and Canada, east of Great Plains.

neglectus Scudd., Proc. amer. acad. arts sc., xxx, 30, 67-68 (1894).

maculatus (pars) Scudd. (nec Harr.), Bost. journ. nat. hist., vii, 434
(1862).

New England to Virginia.

neomexicanus Scudd., Proc. amer. acad. arts sc., xxx, 30, 100-101
(1894).

New Mexico.

nigricans Scudd., Proc. amer. acad. arts sc., xxx, 28, 61-62 (1894).

Kentucky.

nodulosus Brunn., Monogr. Stenop., 64, fig. 33a (1888).

Nebraska to Texas.

occultus Scudd., Proc. amer. acad. arts sc., xxx, 28, 77-78 (1894).

Georgia.

pacificus Thom., Ann. rep. U. S. geol. surv. terr., v, 436 (1872).

unispinosus Brunn., Monogr. Stenop., 64 (1888).

California, Nevada.

pallescens Brun., Can. ent., xxiii, 37-38 (1891).

Nebraska, Wyoming.

pallidus Thom., Ann. rep. U. S. geol. surv. terr., v, 434 (1872).

Rocky Mt. region.

palmeri Scudd., Proc. amer. acad. arts sc., xxx, 25, 40-41 (1894).

Texas.

pinguis Scudd., Proc. amer. acad. arts sc., xxx, 29, 86-87 (1894).

Texas.

polluticornis Scudd., Can. ent., xxxi, 118-119 (1899).

California.

salebrosus Scudd., Can. ent., xxxi, 120-121 (1899).

Washington.

sallei Scudd., Proc. amer. acad. arts sc., xxx, 28, 63-64 (1894).

Louisiana.

scabripes Hald., Proc. acad. nat. sc. Philad., vi, 364 (1853)—Phalangopsis.

Scudd., Proc. Bost. soc. nat. hist., viii, 7 (1861)—Rhaphidophora.

Scudd., Bost. journ. nat. hist., vii, 436 (1862).

Alabama.

seclusus Scudd., Proc. amer. acad. arts sc., xxx, 25, 45-46 (1894).

Iowa, Nebraska.

CEUTHOPHILUS (Continued).

secretus Scudd., Proc. amer. acad. arts sc., xxx, 24, 39-40 (1894).
Texas.

silvestris Brun., Bull. Washb. coll., i, 126-127 (1885).
Kansas.

spinosus Scudd., Proc. amer. acad. arts sc., xxx, 27, 58-59 (1894).
lapidicola Brunn., (nec Burm.), Monogr. Stenop., 62-64 (1888).
Georgia.

stygius Scudd., Proc. Bost. soc. nat. hist., viii, 9 (1861)—Rhaphidophora.

Scudd., Bost. journ. nat. hist., vii, 438 (1862).
sloanii Pack., Ann. rep. Peab. acad. sc., v, 93-94 (1873).
Kentucky, Indiana.

tenebrarum Scudd., Proc. amer. acad. arts sc., xxx, 29, 70-72 (1894).
latens McNeill (nec Scudd.), Psyche, vi, 27 (1891).
Illinois to N. Carolina.

terrestris Scudd., Proc. amer. acad. arts sc., xxx, 26, 46-47 (1894).
lapidicola Scudd. (nec Burm.), Proc. Bost. soc. nat. hist., viii, 7, (1861)
—Rhaphidophora.

Northern U. S. and Canada, east of Mississippi River.

testaceus Scudd., Proc. amer. acad. arts sc., xxx, 30, 92-93 (1894).
Missouri, Nebraska, Wyoming, California.

uhleri Scudd., Bost. journ. nat. hist., vii, 435 (1862).
latisulcus Blatchl., Proc. Ind. acad. sc., 1892, 146 (1894)
Middle states.

uniformis Scudd., Proc. amer. acad. arts sc., xxx, 26, 53-54 (1894).
pallidus Scudd. (nec Thom.), Bull. U. S. geol. surv. terr., ii, 261 (1876).
Nebraska to New Mexico.

utahensis Thom., Proc. Dav. acad. nat. sc., i, 264, pl. 36, fig. 8 (1876).
Utah.

valgus Scudd., Proc. amer. acad. arts sc., xxx, 27, 74-75 (1894).
Colorado.

varicator Scudd., Proc. amer. acad. arts sc., xxx, 25, 42-43 (1894).
Texas.

variegatus Scudd., Proc. amer. acad. arts sc., xxx, 24, 31-32 (1894).
Texas.

vinculatus Scudd., Proc. amer. acad. arts sc., xxx, 29, 91-92 (1894).
Montana and Nebraska to California and Washington.

HEMIUDEOPSYLLA Saussure-Pictet.

californiana Sauss.-Pict. (excl. syn.), Biol. centr. amer., Orth., 302 (1897).

California.

platyceps Sauss.-Pict., Biol. centr. amer., Orth., 302 (1897).

California.

PHRIXOCNEMIS Scudder.

bellicosus Scudd., Proc. amer. acad. arts sc., xxx, 103, 106-107 (1894).

Colorado.

truculentus Scudd., Proc. amer. acad. arts sc., xxx, 103-105 (1894).

Nebraska, Colorado.

validus Scudd., Proc. amer. acad. arts sc., xxx, 103, 105-106 (1894).

California.

DAIHINIA Haldeman.

brevipes Hald., Proc. amer. ass. adv. sc., ii, 346 (1850)—Phalangopsis (Daihinia).

Gir., Marcy, Expl. Red River, 257, pl. 15, figs. 9-13 (1853).

Eastern margin of Rocky Mts.

gigantea Brun., Bull. Washb. coll., i, 127 (1885).

Brun., Can. ent., xxiii, 39 (1891)—Udeopsylla.

Nebraska to Indian Territory.

UDEOPSYLLA Scudder.

nigra Scudd., Can. nat., vii, 284-285 (1862).

Scudd., Bost. journ. nat. hist., vii, 437 (1862)—Ceuthophilus.

Mississippi River to Rocky Mts., Illinois, Arizona, California.

robusta Hald., Proc. amer. ass. adv. sc., ii, 346 (1850)—Phalangopsis (Daihinia).

Gir., Marcy, Expl. Red River, 257 (1853)—Daihinia.

Scudd., Bost. journ. nat. hist., vii, 442 (1862).

compacta Brun., Can. ent., xxiii, 38-39 (1891).

Mississippi River to Rocky Mts., California.

GAMMAROTETTIX Brunner.

bilobatus Thom., Ann. rep. U. S. geol. surv. terr., v, 437 (1872)—Ceuthophilus.

Scudd., Proc. amer. acad. arts sc., xxx, 111 (1894).

californicus Brunn., Monogr. Stenop., 61, fig. 32 (1888).

California.

GRYLLIDAE.

GRYLLOTALPINAE.

Gryllotalpini.

GRYLLOTALPA Linné.

borealis Burm., Handb. ent., ii, 740 (1838).

Haan, Bijdr. kenn. Orth., 225 (1842)—*Gryllus* (*Gryllotalpa*.)

Sauss., Miss. scient. Mex., Rech. zool., vi, 346 (1874)—*Gryllotalpa* (Curtilla).

americana Harr., Cat. ins. Mass., 56 (1835)—undescribed.

brevipennis Serv., Orth., 368 (1839).

longipennis Scudd. (nec Haan), Bost. journ. nat. hist., vii, 426 (1862).

columbia Scudd., Mem. Peab. acad. sc., i, 26, pl. 1, figs. 15, 36 (1869).

U. S. and Canada east of Rocky Mts.

cultriger Uhl., Proc. ent. soc. Philad., ii, 543 (1864).

Texas to California.

major Sauss., Miss. scient. Mex., Rech. zool., vi, 343-344 (1874)—

Gryllotalpa (Curtilla).

? *ponderosa* Brun., Bull. Washb. coll., i, 126 (1885).

Illinois, Kansas.

SCAPTERISCUS Scudder.

abbreviatus Scudd., Mem. Peab. acad. sc., i, 14-15, pl. 1, fig. 8, 20 (1869).

Southern Florida.

mexicanus Burm., Handb. ent., ii, 740 (1838)—*Gryllotalpa*.

Haan, Bijdr. kenn. Orth., 237 (1842)—*Gryllus* (*Gryllotalpa*).

Scudd., Mem. Peab. acad. sc., i, 9-10, pl. 1, fig. 6, 18 (1869).

Southern Florida.

Tridactylini.

TRIDACTYLUS Olivier.

apicalis Say, Journ. acad. nat. sc. Philad., iv, 310 (1825).

Uhl., Say, Ent. N. A., ed. LeC., ii, 239 (1859)—*Xya*.

Sauss., Miss. scient. Mex., Rech. zool., vi, 351 (1874)—*Tridactylus* (*Xya*).

tibialis Guér., Icon. règne anim., Ins., 336 (1829-1838).

U. S. east of Great Plains, except northernmost portions.

fissipes Sauss., Rev. suisse zool., iv, 410, 418 (1897).

Carolina to Texas.

histrionicus Sauss., Biol. centr. amer., Orth., 207-208 (1897)—*Tridactylus* (*Heteropus*).

Texas.

histrionicus Sauss., Rev. suisse zool., iv, 410, 419 (1897).

Texas.

illinoiensis Thom., Proc. ent. soc. Philad., i, 104 (1862).

Illinois.

incertus Sauss., Rev. suisse zool., iv, 410, 418 (1897).

Texas.

minutus Scudd., Bost. journ. nat. hist., vii, 425 (1862).

Sauss., Miss. scient. Mex., Rech. zool., vi, 353 (1874)—*Tridactylus* (*Heteropus*).

Illinois and Minnesota to Florida and Texas.

mixtus Hald., Proc. acad. nat. sc. Philad., vi, 364 (1853)—*Xya*.

Walk., Cat. Derm. salt. Brit. mus., i, 113 (1869).

Sauss., Miss. scient. Mex., Rech. zool., vi, 353 (1874)—*Tridactylus* (*Xya*).

Carolina to Texas.

terminalis Uhl, Scudd., Bost. journ. nat. hist., vii, 425 (1892).

Sauss., Miss. scient. Mex., Rech. zool., vi, 352 (1874).

Massachusetts to Minnesota.

MYRMECOPHILA.

MYRMECOPHILINAE Latreille.

formicarum Scudd., Psyche, viii, 425, 426 (1899).

California.

nebrascensis Brun., Publ. Nebr. acad. sc., iii, 33 (1893)—undescribed.

Scudd., Psyche, viii, 425, 427-428 (1899).

Minnesota to New Mexico.

nehawkae Brun., Scudd., Psyche, viii, 425, 428 (1899).

Nebraska.

oregonensis Brun., Can. ent., xvi, 43 (1884).

British Columbia to Oregon.

pergandei Brun., Can. ent., xvi, 42-43, fig. 4ab (1884).

Southern Atlantic states.

MOGISOPLISTUS Serville.

slossoni Scudd., Psyche, viii, 55 (1897).

Florida.

CYCLOPTILUS Scudder.

borealis Brun., Can. ent., xxiii, 37 (1891).

Nebraska.

squamosus Scudd., Proc. Bost. soc. nat. hist., xii, 142 (1868).

Texas.

GRYLLINAE.

NEMOBIUS Serville.

ambitosus Scudd., Proc. Bost. soc. nat. hist., xix, 81 (1877).

Florida.

aterrimus Scudd., Journ. N. Y. ent. soc., iv, 99, 105 (1896).

Florida.

canus Scudd., Journ. N. Y. ent. soc., iv, 99, 103 (1896).

Texas.

carolinus Scudd., Proc. Bost. soc. nat. hist., xix, 36 (1877).

variegatus Brun., Publ. Nebr. acad. sc., iii, 32 (1893)—*Cyrtoxiphus*.

affinis Beut., Bull. amer. mus. nat. hist., vi, 249, 267, pl. 5, fig. 11 (1894).

Maine to Florida, Texas and Nebraska.

cubensis Sauss., Miss. scient. Mex., Rech. zool., vi, 384-385, pl. 7, fig. 5 (1874).

volaticus Scudd., Proc. Bost. soc. nat. hist., xix, 36 (1877).

Southern U. S. east of Great Plains; rarely in northern states; Maine, Illinois, Iowa.

fasciatus De Geer, Mém., iii, 522, pl. 43, fig. 5 (1773)—*Gryllus*.

Goeze, Ent. beytr., ii, 89 (1778)—*Gryllus* (Acheta).

Scudd., Bost. journ. nat. hist., vii, 430 (1862).

hospes Fabr., Syst. ent., 281 (1775)—*Acheta*.

servilis Say, Harr., Cat. ins. Mass., 56 (1835)—*Acheta*.

vittatus Harr., Ins. inj. veg., 123 (1841)—*Acheta*.

exiguus Scudd. (nec Say), Bost. journ. nat. hist., vii, 429 (1862).

? *marginatus* Murtf., Ins. life, v, 155 (1893).

Nova Scotia to North Carolina, westward to Great Plains.

mexicanus Walk., Cat. Derm. salt. Brit. mus., i, 57 (1869).

California.

mormonius Scudd., Journ. N. Y. ent. soc., iv, 100, 106 (1896).

Utah.

neomexicanus Scudd., Journ. N. Y. ent. soc., iv, 99, 104 (1896).

denticulatus Sauss., Biol. centr. amer., Orth., pl. 11, fig. 25 (1897).

California to Texas.

pictus Scudd., Psyche, vii, 431, 433-434 (1896).

New Mexico.

socius Scudd., Proc. Bost. soc. nat. hist., xix, 37 (1877).

Gulf states.

utahensis Scudd., Journ. N. Y. ent. soc., iv, 99, 103-104 (1896).

Utah.

GRYLLUS Linné.

abbreviatus Serv., Orth., 336 (1839).

Harr., Ins. inj. veg., 122 (1841)—Acheta.

angustus Scudd., Bost. journ. nat. hist., vii, 427 (1862).

signatipes Walk., Cat. Derm. salt. Brit. mus., i, 22 (1869).

United States.

assimilis Fabr., Syst. ent., 280 (1775)—Acheta.

Goeze, Ent. beytr., ii, 87 (1778)—Gryllus (Acheta).

Oliv., Encycl. méth., vi, 634 (1791).

verticalis Serv., Orth., 343 (1839).

aztecus Sauss., Rev. mag. zool., 1859, 316 (1859).

cubensis Sauss., Ibid., 1859, 316 (1859).

lineaticeps Stål, Orth. Eug. resa, 314 (1861).

septentrionalis Walk., Cat. Derm. salt. Brit. mus., i, 18 (1869).

luridus Walk., Ibid., i, 18-19 (1869).

determinatus Walk., Ibid., i, 19-20 (1869).

? *parilis* Walk., Ibid., i, 20 (1869).

? *similaris* Walk., Ibid., i, 20 (1869).

mundus Walk., Ibid., i, 23-24 (1869).

signatus Walk., Ibid., i, 24 (1869).

vicarius Walk., Ibid., i, 24 (1869).

Southern U. S.

domesticus Linn., Syst. nat., i, 428 (1758)—Gryllus (Acheta).

De Geer, Mém., iii, 509-517, pl. 24, figs. 1-20 (1773).

Fabr., Syst. ent., 280 (1775)—Acheta.

transversalis Walk., Cat. Derm. salt. Brit. mus., v, suppl., 6 (1871).

U. S. and Canada east of Great Plains.

luctuosus Serv., Orth., 335 (1839).

Glov., Ill. N. A. ent., Orth., pl. 9, fig. 11 (1872)—Acheta.

U. S.

neglectus Scudd., Bost. journ. nat. hist., vii, 428 (1862).

scudderianus Sauss., Miss. scient. Mex., Rech. zool., vi, 402 (1874).

U. S. and Canada east of Rocky Mts.

GRYLLUS (Continued).

pennsylvanicus Burm., Hand. ent., ii, 734 (1838).

Uhl., Harr., Ins. inj. veg., 3d ed., 152 (1862)—Acheta.

niger Harr., Ins. inj. veg., 123 (1841)—Acheta.

U. S.

personatus Uhl., Proc. ent. soc. Philad., ii, 547 (1864).

Kansas, Nebraska.

saussurei Scudd., Proc. Bost. soc. nat. hist., xix, 35 (1877).

Georgia.

GRYLLODES Saussure.

lineatus Scudd., Ann. rep. chief eng., 1876, 499 (1876).

Sauss., Mél. Orth., ii, 363 (1877)—Gryllus.

Arizona.

OECANTHINAE.

OECANTHUS Serville.

angustipennis Fitch, Trans. N. Y. st. agric. soc., xvi, 411 (1856).

New York to Kentucky and Nebraska.

argentinus Sauss., Biol. centr. amer., Orth., 253-254 (1897).

Texas.

bipunctatus De Geer, Mém., 523, pl. 43, fig. 7 (1773)—Gryllus.

Goeze, Ent. beytr., ii, 89 (1778)—Gryllus (Acheta).

Serv., Ann. sc. nat., xxii, 135 (1831).

Harr., Hitchc., Rep. geol. Mass., 576 (1835)—Acheta.

Haan, Bijdr. kenn. Orth., 225 (1842)—Gryllus (Oecanthus).

Riley, Bull. U. S. ent. comm., vi, 61-62 (1881)—Xabea.

binotatus Gmel., Linn., Syst. nat., i, iv, 2062 (1788)—Gryllus (Acheta).

punctulatus Fitch, Trans. N. Y. st. agric. soc., xvi, 413 (1856).

U. S. east of Great Plains, except northernmost portions.

californicus Sauss., Miss. scient. Mex., Rech. zool., vi, 462 (1874).

California.

fasciatus Fitch, Trans. N. Y. st. agric. soc., xvi, 412 (1856).

Northern U. S. east of Great Plains.

latipennis Riley, Bull. U. S. ent. comm., vi, 61 (1881).

U. S. east of Great Plains.

nigricornis Walk., Cat. Derm. salt. Brit. mus., i, 93 (1869).

New York to Nebraska.

niveus De Geer, Mém., iii, 522, pl. 43, fig. 6 (1773)—Gryllus.

Goeze, Ent. beytr., ii, 89 (1778)—Gryllus (Acheta).

Serv., Ann. sc. nat., xxii, 135 (1831).

Harr., Hitchc., Rep. geol. Mass., 582 (1833)—Acheta.

Haan, Bijdr. kenn. Orth., 225 (1842)—Gryllus (Oecanthus).

discoloratus Fitch, Trans. N. Y. st. agric. soc., xvi, 411 (1856).

fuscipes Fitch, Ibid., xvi, 411 (1856).

U. S. and Canada.

pini Beut., Journ. N. Y. ent. soc., ii, 56 (1894).

Connecticut.

quadripunctatus Beut., Bull. amer. mus. nat. hist., vi, 250-251, 271,
fig. 5 (1894).

New York to Indiana.

TRIGONIDIINAE.

ANAXIPHA Saussure.

exigua Say, Journ. acad. nat. sc. Philad., iv, 309 (1825)—Acheta.

Walk., Cat. Derm. salt. Brit. mus., i, 57 (1869)—Nemobius.

Scudd., Proc. Bost. soc. nat. hist., xix, 82 (1877).

pulicaria Burm., Handb. ent., ii, 732 (1838)—Gryllus.

New York to Texas.

CYRTOXIPHA Brunner.

delicatula Scudd., Proc. Bost. soc. nat. hist., xix, 82 (1877).

Florida.

gundlachi Sauss., Miss. scient. Mex., Rech. zool., vi, 373-375 (1874).

Southern U. S.

PHYLLOSCIRTUS Guérin.

pulchellus Uhl., Proc. ent. soc. Philad., ii, 544 (1864)—Phyllopalpus.

Sauss., Miss. scient. Mex., Rech. zool., vi, 368 (1874).

U. S. east of the Mississippi, except northern portions.

ENEOPTERINAE.

APITHES Uhler.

agitator Uhl., Proc. ent. soc. Philad., ii, 546 (1874)—Hapithus.

Sauss., Miss. scient. Mex., Rech. zool., vi, 490 (1874).

quadratus Scudd., Proc. Bost. soc. nat. hist., xii, 140 (1868)—Hapithus.

tenuicornis Walk., Cat. Derm. salt. Brit. mus., i, 75 (1869)—Lebussa.
Southern U. S. east of Great Plains.

APITHES (Continued).

brevipennis Sauss., Biol. centr. amer., Orth., 268 (1897).

Georgia, Louisiana.

macneilli Blatchl., Can. ent., xxiv, 27 (1892).

Indiana.

OROCHARIS Uhler.

gryllodes Pall., Spic. zool., i, 16, pl. 1, fig. 10 (1767-1774)—*Gryllus*.

Gmel., Linn. syst. nat., i, pt. 4, 2062 (1788)—*Gryllus* (Acheta).

Haan, Bijdr. kenn. Orth., 226, 232 (1842)—*Gryllus* (Eneoptera).

Walk., Cat. Derm. salt. Brit. mus., i, 66 (1869)—*Eneoptera*.

Sauss., Miss. scient. Mex., Rech. zool., vi, 495, 519 (1874).

? *unicolor* Linn., Syst. nat., 10 ed., i, 427 (1758)—*Gryllus* (Bulla).

? *similis* Walk., Cat. Derm. salt. Brit. mus., i, 78 (1869)—*Platydictylus*.

Gulf states.

saltator Uhl., Proc. ent. soc. Philad., ii, 545 (1864).

U. S. east of Great Plains except northernmost and southernmost portions.

uhleri McNeill, Psyche, vi, 9 (1891).

Illinois.

METRYPA Brunner.

lurida Walk., Cat. Derm. salt. Brit. mus., i, 53 (1869)—*Tafalisca*.

Sauss., Miss. scient. Mex., Rech. zool., vi, 513-514 (1874).

Southern Florida.

NOTE.—During the printing of this Catalogue a paper by Hancock has appeared (Ent. news, x, 275-282, —1899) in which *Nomotettix sinuifrons* is described from Minnesota, *Tettix brunneri* Bol. is placed as a synonym of *Tettix granulatus* Kirby sp., while the eastern species commonly, but in his view erroneously, regarded as Kirby's *granulatus* is renamed *Tettix morsei*.

APPENDIX.

Description of Orthoptera belonging to Genera new to the United States.

BLATTIDAE.**Loboptera americana** sp. nov.

Pl. II. Fig. 4.

Form oval, the head completely concealed from above by the pronotum, fusco-castaneous, ferruginous above. Pronotum uniform rather light castaneous, subpyramidal, narrowing rapidly and almost regularly from behind forward, but with a slight constriction mesially, in front not more than one-half as broad as behind, smooth, glistening. Tegmina rounded subtriangular, a little longer than broad, lateral, and separated at base by fully their own width, luteo-castaneous. Abdomen castaneous at base, but beyond fuscous, smooth and glistening.

Length of body, 9 mm.; breadth, 5 mm.; length of pronotum, 3 mm.; tegmina, 1.75 mm.

1 ♀. Ehrenberg, Colorado River, Arizona, E. Palmer.

The tegmina are much larger than in *L. annulicornis* Sauss.-Zehntn., the only other North American species known.

Pelmatosilpha rotundata sp. nov.

Plate II. Fig. 5.

Body rotundate, hardly depressed, oval, uniform dark castaneous. Head concealed beneath pronotum, the eyes as distant as the antennal scrobes. Pronotum smooth, glistening, without depressions, well rounded, without angulations, feebly convex posteriorly. Tegmina subcorneous, almost as long as the abdomen and enclosing it, exposing only the supraanal plate, very broad and at apex broadly and symmetrically rounded; wings of equal length. Legs black, the hind tibiae triseriately spined above, the metatarsus of hind legs as long as the three succeeding joints together. Cerci broad lanceolate, hardly surpassing the supraanal plate, the latter rounded triangular, apically

subtruncate and a little emarginate; subgenital plate deeply fissate in the female, with a rather shallow V-shaped emargination in the male; styles slender, pointed, shorter than the plate.

Length of body, ♂, 30.5 mm., ♀, 31.5 mm.; breadth, ♂, 16 mm., ♀, 16.5 mm.; length of tegmina, ♂ ♀, 21 mm.

1 ♂, 1 ♀. Texas, Panama.

This species is closely allied to *P. alaris* Sauss., of Brazil, with which I had an opportunity of comparing it in 1865, but it is larger and uniformly colored, with much shorter cerci.

Hormetica advena sp. nov.

Testaceous and black. Head completely concealed from above, the face light testaceous, with a broad median castaneous band failing to reach the labrum, and above marked by three vertical testaceous lines; first two joints of antennae light castaneous, the remainder black. Body oval, the pronotum large, its lateral margin strongly reflexed and within the fold thus formed strongly and coarsely pitted; light castaneous, the disc with a large, roughly embossed, rudely horse-shoe shaped elevation heavily and broadly marked with black and within coarsely punctate and dotted with fuscous. Tegmina subtriangular, reaching rather less than half way to tip of abdomen, the costal margin slightly reflexed, black centrally, bordered very broadly along the whole costal margin and narrowly along the apical margin with light castaneous. Mesonotum and metanotum castaneous, each twice narrowly banded transversely with fuscous. Abdomen with strongly rounded contour, black, laterally and apically margined conspicuously with testaceous. Legs testaceous, the spines black.

Length of body, 34 mm.; pronotum, 11.5 mm.; breadth of same, 17 mm.; length of tegmina, 10 mm.; breadth of same, 9 mm.

1 ♀. Belmont, Mass., December, G. H. Parker (Mus. Comp. Zool.). Unquestionably introduced from tropical America, but an undescribed species, most nearly related to *H. verrucosa* Brunn.

PHASMIDAE.

Sermyle strigata sp. nov.

Plate I. Fig. 3.

Whole body dull ashy grey. Head furnished above with four longitudinal rows of small tubercles. Whole thorax mesially carinate and also furnished above on either side with a pair of carinae, all the carinae equidistant and furnished as well as the intermediate spaces

with small sparsely scattered tubercles. Abdomen and intermediary segment similarly marked but with an additional pair of subdorsal carinae and with fewer and much more obscure granulations, mostly confined to the carinae. Hind femora reaching to the end of the fifth abdominal segment. Abdomen nowhere expanded.

Length of body, 72 mm.; antennae, 30 mm.; mesothorax, 18.5 mm.; metathorax, 10.5 mm.; abdomen, 35.5 mm.; hind femora, 22.5 mm.; width of middle of mesothorax, 3 mm.

3 ♀. Texas, Boll, Lincecum.

This species appears to fall near *S. azteca* Sauss., but differs by the carinate thorax, with its dull coloring.

***Bacunculus tenuescens* sp. nov.**

Plate I. Figs. 1, 2.

Body exceedingly slender, flavous beneath, brown (♂) or green (♀) above, becoming infuscated on the lower portion of the sides forming a postocular stripe. Head greatly elongated, much longer than the pronotum; antennae much shorter than the body. Entire body quite smooth with a very delicate mesial carination. Seventh and ninth abdominal segments of male subequal in length, slightly longer than the eighth and about half as long as the sixth, the seventh segment scarcely inflated, bearing beneath a deflexed subspatulate convex plate, reaching the tip of the eighth segment and no broader than it; ninth segment cylindrical, equal, truncate, bearing a pair of decurved and incurved, cylindrical but slightly clavate, blunt tipped cerci, about as long as the segment.

Length of body, ♂, 64.5 mm., ♀, 53+ mm.; antennae, ♂, 41 mm., ♀, 35 mm.; head, ♂, 3.25 mm., ♀, 3.5 mm.; thorax, ♂, 31.5 mm., ♀, 25 mm.; mesothorax, ♂, 16 mm., ♀, 13 mm.; abdomen, ♂, 30 mm., ♀, 25+ mm.; fore femora, ♂, 18 mm., ♀, 15.5 mm.; middle femora, ♂, 14.5 mm., ♀, 13.5 mm.; hind femora, ♂, 20 mm., ♀, 16 mm.; width of mesothorax in middle, ♂ ♀, 1 mm.

1 ♂, 1 ♀. Cedar Keys, Fla., June 6; Capron, Fla.

The tip of the abdomen of the female is lost.

ACRIDIIDAE.

***Plectrotettix patriae* sp. nov.**

Plate III. Fig. 2.

This species differs from *P. viatorius* (Sauss.), to which it is closely allied, by its smaller size and by the markings of the tegmina, which

do not show a distinct series of pallid stripes obliquely crossing or almost crossing the wing, but only feeble traces of these just below the main vein. The longitudinal carinae of the occiput are also more pronounced and the hind tibiae are uniformly luteous, the hind margin of the prothorax is more obtusely angled and the disk of the metazona more finely and more obscurely punctate.

Length of body, 29.5 mm.; tegmina, 27.5 mm.; hind femora, 21.5 mm.

1 ♀. California (the label is marked with a query).

LOCUSTIDAE.

Hormilia elegans sp. nov.

Plate III. Fig. 1.

Green, the lateral carinae and posterior margin of pronotum pallid, as also the oblique branches of the principal veins of the tegmina, giving it a very elegant ornamentation. Pronotum with strongly arcuate and pronounced lateral carinae, making the disk twice as narrow in the middle as behind, the hind margin strongly convex and subangulate, the lateral lobes fully as deep as long, strongly convex below. Tegmina surpassing the hind femora, with feebly sinuate hind margin, scarcely ampliate apically, the apex roundly and obliquely subtruncate, the radial branch with three or four veinlets, itself united near base with the upper ulnar branch as if a continuation of the same; wings surpassing a little the tegmina. Fore femora unarmed beneath. Ovipositor brief and broad, upcurved.

Length of body, 17 mm.; tegmina, 28 mm.; wings, 30 mm.; hind femora, 19 mm.

3 ♀. Las Cruces, New Mexico, October, T. D. A. Cockerell; Mesilla, New Mexico, June 30, A. P. Morse.

In the markings of the tegmina and the character of their neuration this insect differs from all the other species known.

Engoniaspis testacea sp. nov.

Nearly uniform dull testaceous, the lateral lobes of pronotum marked posteriorly with fuscous, the hind legs ferruginous, which also tinges the lateral lobes. Head well rounded and full, the fastigium moderate, rounded. Pronotum with gently arcuate disk, angularly separated from the nearly vertical lateral lobes, forming lateral carinae which are gently sinuate, the disk narrowest in the middle of the

anterior half; no median carina, but a slight and fine median sulcus fading posteriorly; front margin feebly convex, hind margin truncate; lateral lobes deep anteriorly, rotundato angulate below, the oblique hind margin with a considerable but broad sinus; prosternal spines short, blunt. Tegmina mere pads, wholly concealed from above by the pronotum. Hind femora very short, but slender, hardly if at all surpassing the abdomen; hind tibiae armed beneath at tip with a pair of larger spines having a smaller pair between them. Abdomen very plump.

Length of body, 27(?)mm.; pronotum, 9.25 mm.; hind femora, 18 mm.

The only specimen seen (in the U. S. National museum) has been damaged and has lost the end of the abdomen, so that the sex is indeterminate. As it comes from the Riley collection without locality, it was presumably collected by him in Missouri, from which the specimens in Brunner's collection came on which (undescribed) he founded the genus. This is therefore probably his species and if so the type of the genus. According to Brunner's tables, the ovipositor is straight.

***Eremopedes unicolor* sp. nov.**

Plate II. Fig. 1.

Nearly uniform dull brownish testaceous, the hind femora feebly infuscated apically. Head full, the face somewhat ferruginous and the genae with fuscous blotches, the fastigium rather prominent, rounded; antennae very slender, about half as long again as the body, testaceous. Pronotum well rounded, equally arched in front and behind, without lateral or median carinae, the front margin feebly convex, the hind border truncate, but laterally rounded; lateral lobes obliquely deflexed, well rounded beneath, the oblique posterior margin with a distinct though slight sinus. Tegmina aborted. Legs rather long and slender, the fore tibiae with three spines above on outer margin. Ovipositor more than two-thirds as long as the hind femora, distinctly arcuate, moderately slender, faintly tapering, apically acuminate, castaneous the apical margins darker.

Length of body, 25 mm.; pronotum, 8 mm.; fore femora, 7 mm.; hind femora, 21 mm.; ovipositor, 16.5 mm.

1 ♀. Arizona, U. S. National Museum.

This is the species on which the genus was established and hence is the type, although another species has previously been described under

this generic name—*E. scudderi* Cock. It differs from that species in its larger size, relatively shorter hind legs and much shorter ovipositor.

I possess a third species of *Eremopedes* from Pecos River, Texas, but unfortunately none of my specimens are well preserved.

***Idionotus brunneus* sp. nov.**

Plate II. Fig. 2.

Uniform dark wood-brown without markings. Head well rounded and smooth with rather prominent rounded fastigium, the genae feebly, sparsely and minutely punctate. Pronotum rather small, the disk nearly plane and smooth, with faint, minute and very sparse punctuation; median carina present only on posterior third and obscure; lateral carinae very distinct and sharply angulate, percurrent, sinuate, rapidly convergent in middle of anterior half and then again divergent; front and hind margins truncate; lateral lobes obliquely vertical, not quite so deep as long, the lower margin subrectangulate posteriorly, the hind margin with a slight sinus. Tegmina subcircular pads of no great size. Legs long and slender, the attenuate portion of the hind femora nearly as long as the thickened portion, and extending far beyond abdomen; fore tibiae with three spines above on inner margin, the outer margin unarmed. Ovipositor fusco-ferruginous, slender, nearly straight, subequal, the tip acuminate, fully two-thirds as long as hind femora.

Length of body, 19 mm.; pronotum, 6 mm.; fore femora, 5.5 mm.; hind femora, 20 mm.; ovipositor, 14 mm.

1 ♀. Folsom, Sacramento Co., Cala., July 7, U. S. National Museum.

This may be regarded as the type of the genus.

***Ateloplus notatus* sp. nov.**

Plate II. Fig. 3.

Luteo-testaceous, marked with fuscous. Head luteo-testaceous, the face luteous, somewhat appressed, the antennae luteous, faintly and narrowly interrupted with fuscous, very slender, more than twice as long as the body. Pronotum ample, transversely arched, the lateral lobes flaring and forming a continuous curve with the dorsum, below rounded obtusangulate, the front margin faintly arcuate, the hind margin truncate or feebly and very broadly emarginate, the prozona marked off by a rather sharply depressed obtusangulate v-shaped

sulcus, the whole luteo-testaceous clouded with fuscous blotches and a median fuscous stripe. Tegmina aborted. Legs luteo-testaceous, all the femora but especially the hind pair marked apically with fuscous, the outer face of the hind femora also with a median blackish fuscous stripe; fore tibiae unarmed above except for an apical spine on the outer side; hind tibiae luteo-castaneous marked basally with fuscous. Abdomen luteo-testaceous minutely dotted with fuscous at the apex of the segments and with a broken median fuscous stripe. Ovipositor gently arcuate, about two-thirds as long as the hind femora, tapering only at apex and finely pointed, luteo-castaneous, the margins feebly infuscated apically.

Length of body, 21 mm.; pronotum, 7 mm.; fore femora, 6.5 mm.; hind femora, 18.5 mm.; ovipositor, 12.5 mm.

1 ♀. San Diego, Cal., C. R. Orcutt, U. S. National Museum.

This is the type of the genus.

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CORRECTIONS.

Page 4, line 28, for bilinata, read bilineata.

6, " 15, for Sphongophora, read Spongophora.

38, last line but one, for Rep., read Ann rep.

43, line 14, for thalassinus, read thalassinus.

52, last line but one, add:—Pezotettix.

53, last line, add: New Mexico.

63, after last line but 5, read: Washington and Oregon to Wyoming.

65, after 3d line, read: Arkansas and Nebraska to Illinois and Kentucky.

NOTES UPON THE ETHNOGRAPHY OF SOUTHERN MEXICO.

EXPEDITION OF 1898.

MARTIN A RYERSON EXPEDITION OF 1899.

MRS. FRANK G. LOGAN EXPEDITION OF 1900.

BY FREDERICK STARR.

FEW PERSONS realize the Indian population of Mexico. Most of us think of our sister republic as composed of a *mestizo* or mixed-blood population. Government statistics, however, show about $\frac{1}{12}$ of the total population to be pure Indian. The Indians are not, however, spread uniformly over the country. There are some tribes indeed in the north—Yaquis, Mayos, Tarahumares, Coras, Huicholas,—but in general Northern Mexico is occupied by *mestizos*. In Southern Mexico, on the contrary, from the City of Mexico southward the Indian overwhelmingly predominates. There many tribes, each with its own language and peculiarities are crowded together in masses. Among these tribes many old ideas and customs survive, much of ancient dress and art. An impressive fact is the curious way in which some phases of the old life may be lost while others are retained. Thus, the Mixes are among the most conservative mountain tribes: at all the villages the native tongue is spoken and in some the women hardly understand any other; yet the dress is European. On the other hand in some Zapotec villages the women frequently wear native dress, but speak the old language rarely if at all.

The writer's main purpose in his last three journeys was to ascertain and define the physical types of the different tribes. To accomplish this three kinds of work were done: (a) measurements were taken upon one hundred men and twenty-five women in each tribe, and a description written of each subject; (b) photographs were made of selected subjects, a front and profile view being taken of each; (c) plaster busts were modeled from subjects who seemed to be typical, five subjects generally being selected in each tribe. The results of the measurements will probably be published after the work is finished

as a *Bulletin of the Department of Anthropology of the University of Chicago*. While doing this work in physical anthropology many photographs and data of ethnographic interest were secured. A selection of the photographs has been published under the title *Indians of Southern Mexico*. The volume is an Ethnographic Album of one hundred and forty-one plates, with thirty-two pages of descriptive text. The ethnographic notes are *here* presented. They make no claim to completeness, but it has seemed worth while to publish them; other travelers may pass them by and many customs and practices will soon be gone.

Some things are common to all the Indian tribes and even mark the *mestizo* as well. Thus the use of the *metate* for grinding maize is universal. This instrument is a flat slab of stone with three supporting legs cut from a single block: one of the supports is shorter than the others so that the flat upper surface slopes somewhat. A second stone, long, cylindrical but somewhat tapering toward the ends is used as a rubber. The maize is ground between the two to a meal or to a dough. The roller or rubber is called *metlapilli*, child of the *metate*. These names, derived from the Aztec, are widely used. The *tortilla*, Aztec *tlaxcal* (bread) is as widely extended in Mexico as the *metate* to which it owes its origin. It is a griddle cake of corn meal. The grains of maize are soaked in lye-water and then rubbed to a dough with the *metlapilli*. This dough is slapped from hand to hand, all the time being turned around and around, until it is shaped into a thin, flat, round cake, which is baked upon an earthen griddle. There are several kinds of *tortillas*; some are thin, while others are fat; some have a dark green or blueish color and contain an admixture of *frijoles* (beans). *Tamales* are a sort of dumpling made of corn meal wrapped in corn husks and boiled; they may be sweetened, or hot with chili, or lined with meat or the flesh of fowls. *Atole* is a thickish, sweet, gruel of corn which is drunk from *jicaras* (cups). *Champurado* is a mixture of *atole* with chocolate. *Mole* is a stew of meat, with nuts, raisins, vegetables, etc., in a chili sauce; two kinds are favorites, *totomol* (Span. *mole de guajalote*, turkey mole) and *tlilmol* (Span. *mole prieto*, black mole).

During the expeditions of 1898, 1899, 1900, the author visited sixteen or seventeen tribes. The location of thirteen of these are shown in the sketch map accompanying. The numbers on the map show the areas of:

I. Otomis. II. Tarascans. III. Aztecs. IV. Tlaxcalans. V. Mixtecs. VI. Triquis. VII. Zapotecs. VIII. Mixes. IX. Tehuantepecanos (Zapotecs). X. Juaves. XI. Chontals. XII. Cuicatecs. XIII. Chinantecs.



The additional tribes visited in 1900 are located as follows: Mazatecos adjoin XII and XIII. Chochos lie west of XII adjoining V. Tepehuas and Totonacos lie east and north from the eastern part of I.

THE OTOMIS.

The Otomis are considered among the oldest of the peoples of Mexico. The name is variously written Otomí, Othomí, Otomite. They themselves call their language the *hia-hiu*. In 1767 Luis de Neve y Molina wrote an important work upon the language, which did much to clear up the confusion which previous writers had produced concerning it. In 1845 Naxera aroused considerable interest by a dissertation upon the language written in Latin.* It is claimed that the name *hia hua* signifies "the language which endures"; some writers assert that its meaning is "the three-fold language," reference being made to its vowel intonations. Naxera in reply to this says there are not three, but five, such intonations. All writers agree that the language is exceptionally difficult. Naxera says: "it is harsh, dry, ungrateful to the tongue and even more so to the ear." Most

*Reglas de ortografía, diccionario y arte del idioma othomi. Mexico. 1867.
Disertacion sope la lingua, othomi, leida en latin. Mexico. 1845.

students assert that it is monosyllabic: while some words have two syllables, and a few have three, such are really compound words, each part maintaining its full original meaning or value. Brinton made a vigorous but unsatisfactory argument against this claim. Thirty-four letters are necessary for writing the language, of which thirteen are vowels. A considerable number of onomatopoeic words occur in the language. The parts of speech are badly distinguished, the same word being variously used; relations between the words of a sentence are shown chiefly by position. There are many homonyms and the dissyllabic words, when examined, are usually found to consist of a significant syllable, homophonous in character, and a determinative syllable designating which of the several possible meanings is intended. It is not at all strange that various writers have tried to prove a relationship between this curious language and the Chinese and to see in it a primitive linguistic type.* The language varies so greatly that it has been said that there are as many dialects as there are villages. Pimentel makes it the type of a linguistic family to which also belong the languages of the Mazahuas, the Serranos, the Pames, and the Jonaces or Mecos.

Most writers give the Otomis a bad name. Father Sahagun says that the Aztecs used the word Otomi, in contempt, as a synonym of stupidity. To a stupid dolt, they might say—"You Otomi!" Naxera says: "the people were rude and passed a miserable existence in the mountain forests, and even to-day, dispersed here and there, scattered from their homes by the Spaniards they have not bettered their condition." Garcia y Cubas says: †"Mistrust, indifference and ignorance are revealed in the spirit of their character, which among the Indians of the Sierra is shown to be astute, hypocritical and treacherous, differing in this peculiar respect from the other natives, who without being free from other defects, possess in exchange very good qualities." It is said that they were reduced to settled, village, life only in the fifteenth century, when in subjection to Texcoco. They were not entirely subdued by the Spaniards until the seventeenth century. They occupied an immense area and are now only second to those who speak Aztec in the area they occupy. They are numer-

* Among them Gumesindo Mendoza — *El Otomi es un modelo del origen de las palabras en las lenguas madres, y un ejemplo de como procedieron las razas primitivas para formar su idioma.* Boletín de la Sociedad Mexicana de Geografía y Estadística. 1872. pp. 41 and 440.

† The Republic of Mexico in 1876. p. 121.

ous in the States of Mexico, Querétaro and Guanajuato and are found locally in San Luis Potosi, Vera Cruz, Puebla, Hidalgo, and Michoacan. Their name is variously spelled — Mazahua, Mazahui, Matzahua, Matlazahua, Mozahui. In 1876 according to Garcia y Cubas there were 550,000 Otomis including Serranos and Jonaces, 50,000 Mazahuas and 25,000 Pames — a total in the Otomi family of 625,000.

To-day the Otomis live in well built villages. Huixquitucan, with its dependent villages, forms a municipality of three thousand persons. Each family has its little patch for raising maize; contiguous patches are separated by lines of maguey (*Inds. So. Mex.*, Plates I, II) from which plants much *pulque* is made. The houses are of adobe bricks and are substantially built. They are roofed with long and narrow shingles, which are held in place by strips of wood weighted with stones, or by long pegs. (*Inds. So. Mex.*, Pl. III.) Maize, when husked, is stored in high square granaries, called *cincolotes*, made of sticks built up in cob-work; the husks are piled up in neat stacks upon a platform supported by posts. (*Inds. So. Mex.*, Pl. III, IV.)

The Otomis spin wool and much *ixtli* fibre, but practically no cotton. Women often spin as they walk. A hank of *ixtli* fibre (derived from the maguey) is thrown over the shoulder from which fibre is paid out to the spindle which is whirled or held in the hands. This consists of a slender stick about a foot in length upon which is fastened a pottery spindle-whorl. These spindle-whorls are not made by Otomis now, but are found in the fields and reapplied to their ancient use. The spindle is widely used by Mexican Indians and is everywhere known by its Aztec name of *malacatl*. At the upper end of the Otomi spindle is a hook used to catch the fibre and hold it while the twisting of the thread takes place. The finished thread is wound upon the spindle above the whorl. This *ixtli* fibre is usually spun uncolored but sometimes it is stained orange with a vegetable dye before being spun. (Fig. 7.)

Otomi women are far more conservative in the matter of dress than the men. The latter rarely wear other garments than the unbleached cotton shirt and drawers worn in most parts of Indian Mexico and Central America. A few old men wear a jacket made of woollen stuff, dark blue in color with a narrow white stripe. This consists of an inverted sack or bag, with slits for the passage of the head and arms; to the latter are attached rather large sleeves. (*Inds. So. Mex.*, Pl. XII, XIII.) This garment reaches well to the

knees but is usually girded up so as to appear much shorter. These old men also may wear wide leather trousers, slit at the sides, which reach the knees. (*Inds. So. Mex.*, Pl. VI.) The belt worn by men is rather plain. It may be of plain white cotton or may have inwoven color designs. These are usually bands of bright colored cotton or wool. In the specimen figured (Fig. 4) the belt is of white cotton with decorative bands in red, with purple and green borders; through the middle of each band runs a serpentine line of red wool, raised well above the rest of the texture, which leaves a double line of semi-lunar white spots along its sides. The weaving is close and fine; the length is some ten feet, while the breadth is but five and a half inches. Such belts are wound several times about the body.

Otomi women usually wear the native dress — *camisa* or *huipil* and *enagua* or *cueitl*. The *camisa* or shirt covering the upper body is a simple inverted bag of purchased cotton. It has head and arm slits but is sleeveless. At the sides of the head slit and along the lower edge are decorations, embroidered designs in bright wools — red, purple, green, and orange. The lower border bears a simple, running design in red; just above this in the middle is a conventionalized floral pattern, while small designs are worked at the corners. The design at the neck is more complicated and is repetitive, presenting two birds facing a monument, which stands between them; these elements are separated by a stiffly spreading floral tree. (Fig. 1.) We have described an individual example. These *camisas* vary greatly in decoration and are sometimes much larger than the one illustrated. The idea is, however, in all the same. The *enagua* consists of two strips of cloth, usually unlike, stitched together along the side. The two united are broad enough to reach from a little above the waist to below the knees or almost to the ankle. Of these two strips one is usually unbleached cotton, purchased in the city; the other is native stuff, woven in narrow stripes. The general effect of these stripes is blue, brown, or reddish brown. The *enagua* is made up so that the stripes run horizontally across the figure of the wearer. (*Inds. So. Mex.*, Pl. V.) The *enagua* of the Otomis is comparatively scant, but is more than long enough to go around the body. Women's belts vary little in size and pattern, but much in color. The foundation is a white cotton, striped with color bands: the central band is broad and bears highly conventional designs. In the portion represented in Fig. 3 there are, from below upward, a complicated rosette and dia-

mond pattern, a rectangular combination, an animal with tail raised, a woman in European dress with a large hat, a hexagonal design made by six triangles with apices meeting, the animal with upraised tail, a complicated hexagon-sigma etc. pattern, and a creature as much resembling an ostrich as a giraffe. This belt measures ten feet in length by about six inches in breadth.

Formerly men wore the hair in a braid down the back. Few retain this ancient method. Antonio Calistro, (*Inds. So. Mex.*, Pl. XIII) at eighty-four the oldest man in his village, was the only one at Huixquilucan who did so. This old man walked in from his farm four miles to be measured and photographed, while most of his townsmen objected to both operations; it appeared that he had somewhere heard that the work was being done for the Pope, who wished to see how his Otomi children look.

Women, frequently, and men, sometimes, carry an *ayate* or carrying cloth made of *ixtli* fibre. It is made by placing two strips of the material side by side and stitching the line of junction with colored wools. Decorative designs are worked upon them in colored wools; these are usually simple—like the triangles placed tip to tip in Fig. 5; sometimes a stripe of geometrical patterns runs across the whole *ayate*; occasionally animal and bird designs occur. *Ayates* range in size from one-and-a-half by two-and-a-half feet to about four by five feet. The material is wonderfully strong and durable: while rather coarse and harsh, occasional specimens are produced which are almost as soft and flexible as cotton. The *ayate* is used in carrying all but the most awkward burdens: the parcel is laid upon it and two opposite corners of the cloth are brought over it and tied: the package is then lifted to the back and the other two corners are brought around over the shoulders and knotted in front. (*Inds. So. Mex.*, Pl. VIII, X, for illustrations of babies carried in *ayates*). *Ixtli* is sometimes, though not often, made into garments. The man represented in Plate XI, (*Inds. So. Mex.*) wears a tattered upper covering of *ixtli*. In Fig. 6 is represented a curious cover or spread for a box or table. It is made of *ixtli* fibre loosely woven into an open mesh fabric. Upon this unsubstantial foundation are needle-worked geometrical, floral, bird and animal designs in purple, red, green and orange wools. They are in open patterns of cross-stitching. An examination of the figure will bring out many curious details. The double-head eagle, near the centre of the piece, is of especial interest.

. THE TARASCANS.

The Tarascans live chiefly in the State of Michoacan, of which they form one-fifth of the population ; a few live in the adjoining states of Guerrero, Guanajuato and Jalisco. The former area occupied by them — as shown by geographical names — was considerably larger. They now number one quarter of a million persons. In the cities of Patzcuaro, Uruapan, Zamora, Chilchota, are many *mestizos* : but there are many large, purely Indian, towns like Cheran, Capacuario, etc. In these Indian towns Tarascan is the commonly spoken language. Orozco y Berra considered this language independent, unrelated ; Pimentel describes it as polysyllabic, polysynthetic and sub-inflected. It requires an alphabet of twenty-seven characters. Accent or intonation plays a considerable part in differentiating polysyllabic homophones. The language has been considerably studied. The old Tarascans had a characteristic culture ; an organized government ; considerable differentiation of trades, each of which had a leader or director who bore a special title. Thus, the chief feather-worker was called the *usguaricuri*. The worship was a developed polytheism ; human victims were sacrificed ; there were many priests with varying functions and differing degrees of importance. The ancient Tarascan capital was Tzintzuntzan on Lake Patzcuaro. The people of today are agriculturists ; those of Janicho, on an island in Lake Patzcuaro, are fishermen. In disposition the Tarascans are reserved and suspicious.

Tarascan houses are chiefly of two kinds : of sundried *adobe* bricks and of logs. The latter are well constructed, the logs being neatly fitted. These usually have a four-pitched roof, the front and rear slopes being wider than the end slopes and meeting for a certain distance along a ridge line. Such log houses with four-pitched roof are shingled with long and narrow boards. The *adobe* houses usually have the roof with two pitches from a ridge pole and are covered with tiles. (*Inds. So. Mex.*, Pl. XVIII, XX.) In the towns on Lake Patzcuaro the *adobe* house with tiled roof is the common type ; along the road from Patzcuaro to Uruapan, and at Cheran, Parracho, etc., the log house with shingled roof prevails. These log houses on the roadside are all adapted to business ; in the side toward the road there is a small, rectangular opening which can be closed with a wooden shutter. When these are opened little stocks of spirits, fruits, cigar-

ettes, etc., are displayed to the traveler. In some Tarascan towns—e. g. Santa Fe de la Laguna on Lake Patzcuaro—the houses are embowered in fruit trees and the houses and grounds are enclosed by a wall of adobe bricks some eight feet or so in height. Entrance to the enclosure is given by a gateway, which is usually protected by a little two-pitched tiled roof. The rear plank of the gate—i. e. that which is hinged to the supporting post, and the upper bar are often in one piece, (connected trunk and branch of a tree). There appear to be no temascals or sweat-bath-houses. In Lake towns where pottery is made e. g. Santa Fe de la Laguna, there are pottery kilns at many houses. They are built of stones and mud and are circular: they measure four feet or more across and nearly three feet in height. The unbaked vessels are built up in the kiln quite solidly almost to the top and are then covered with a layer of broken pots. The fire is put through a little opening, into an apartment below the vessels and is increased little by little until the whole mass is intensely heated; this complete heating is kept up for some time and then allowed to die down. A sheltering roof is built over these kilns. The pottery of Santa Fe is of three wares—brown with black cloudings, brilliant black glaze, green metallic glaze. The clay used is local and is pressed in molds. The green glaze is produced by applying a wash of white earth, brought from a distance, and heating. The pieces are usually of moderate size or small; cups, vases and pitchers are the common forms manufactured. There are at least twenty-one other towns on Lake Patzcuaro. Among them Tzintzuntzan is well known as being the ancient capital and possessing in its village church an original Titian—a Descent from the Cross. There are many *mestizos* in its population. Quiroga, famous in local ecclesiastical history, having been formerly a diocesan capital, manufactures many *enaguas* of black wool. Janicho (*Inds. So. Mex.*, Pl. XVI) is practically confined to fishing, though the little rock island on which it is situated is cultivated over its whole available surface; nets and fish spread out on mats to dry are the things most in evidence to the visitor. (*Inds. So. Mex.*, Pl. XIX, XX.) Men make and mend the nets. (*Inds. So. Mex.*, Pl. XXII.)

The canoes used on the lake are dugouts; they range from hunting canoes for one man to travel canoes that will carry eight or more persons. At the stern they are cut almost square; at the bow trimmed to a slope from the water upward; they are wide and flat-bottomed

below ; the walls are rather thin, thicker below than above, and almost vertical inside ; there are buttressing pieces left at two or three places on the bottom which serve as strengtheners and for seats ; the bow not only rises, but also narrows, and a buttress block left in it serves as a foot-rest for the steersman. Paddles, cut from a single piece of wood, with a beautifully round blade some eight inches in diameter, and a handle three feet or so long, serve for propulsion ; the paddle may be used on one side of the canoe only, or alternately on both ; in the former case after a direct stroke for propulsion, an oblique stroke is given to maintain the course ; women paddle as well as men, and when several paddlers move together excellent stroke is observed. The steersman, sitting high-perched in the bow, uses a paddle similar to the others, but with a lengthened handle, which passes through a rest or loop made by lashing a crooked stick to the upper edge of the canoe on one side. Gum from pine trees is used in calking cracks or splits in these canoes. (*Inds. So. Mex.*, Pl. XVIII, XXI.) In hunting ducks a spear-throwing stick is used, which is called *tsu-pa-kwu*. (*Inds. So. Mex.*, Pl. XXI; also Fig. 12.) This is simple, about two feet long, with two holes for the fingers, a groove in which the spear shaft lies and a peg against which the butt rests ; there is also a hook below the end for dragging floating spears to the canoe. The spears are made of long canes with two or three divergent iron points firmly bound in. (See also Starr : *Internationales Archiv für Ethnographie*: vol. XI, pp. 233, 235.) The nets used in fishing are long seines and great dip nets. It is said that the fish of the lake will not take bait. In making nets a special wooden needle is used.

The localization of Tarascan industries is notable. At Parracho a characteristic *reboso* is made : canoes are hollowed out at Nehuatzen ; paddles are made at Pichataro ; plaques for lacquering are cut out at a single town in the Sierra and the lacquering itself is done at Uruapan ; a handsome black and green pottery is made only at the Once Pueblos.

Woman's dress is notable. The *camisas* are of cotton with the embroidered decoration about the neck in colored wool ; the design is little varied. (Fig. 8.) Sometimes the decoration is open work instead of embroidery. (*Inds. So. Mex.*, Pl. XXX.) *Rebosos* are universally worn : those made at Parracho are famous. Of these there are four grades. The cheapest is coarse and of dark blue ; the finest are much firmer and finer in texture and black. They range in price

from fourteen reales to six pesos. All are supplied with a characteristic fringe; this has the usual knotted network of cotton cords for a foundation, upon which is worked by tying a covering of snowy-white and bright blue flossy silk threads; these are so managed as to produce geometrical designs and bird, animal, or human figures. In the upper of the two specimens illustrated (Fig. 9) the pattern is geometrical; in the lower, bird and human figures. The Tarascans were anciently skilled feather-workers. Two *mestizos* at Patzcuaro, who cover printed pictures with humming bird feathers are popularly supposed to continue the old art. To us it seems that these Parracho weavers have better preserved the tradition. These beautiful borders of floss silk look much more like feathers than like thread-work and the mode of attaching the threads to the knotted network is curiously like the Polynesian method of using feathers in their famous ancient robes. The Tarascan *enagua* is a long strip of black woolen cloth sewed together at the ends. (It is really made by sewing several narrow strips vertically side by side.) This is worn wrapped about the body, thrown into many vertical pleats. It is worn over a long strip of unbleached cotton which is also thrown into pleats. When these two articles are properly adjusted they are held in place by belts around the waist. One of these *enaguas* or skirts in our collection consists of a strip *twenty-two* feet long and thirty-eight inches wide; it is made of fourteen strips each thirty-eight inches long, laid side by side and sewed together. This whole twenty-two feet of length must be so pleated as to bring the garment down to fit the body of a little creature far smaller than the women among us. The women's belts are admirably woven. They consist of cotton in which conventionalized designs are woven with colored wools. An examination of the illustrations (Figs. 10, 11) will show that these patterns are geometrical designs and bird, animal and human figures. Thus the first specimen presents a series of birds all alike in size and form; the second presents five female figures separated by transverse lines; the third has again the bird pattern. In Fig. 11 there is a two-headed eagle, a geometrical design, an animal, three geometrical designs, another bird, etc. While the foundation of these belts is white, the figures are in red, green, purple, purple red, or black. The effect is pleasing. These belts are long in proportion to their width and will pass several times around the body. It is customary to wear several of different colors and different widths at one time: the first is wrapped around and around

the waist, upon itself; a second is wrapped around upon it; others follow. Six or eight may be used at once and form a conspicuous stiff and thick band or ring about the body. The women are fond of silver ornaments—especially earrings—and necklaces; red coral is a favorite material for the latter. (*Inds. So. Mex.*, Pl. XXX.)

The lacquer work for which Uruapan is famous is done by Indian women. The articles are decorated gourds, plaques, and round or elliptical table tops. The colored gourds are made to imitate fruits; a common form is a pear. The color is carefully and slowly rubbed on; the *aje*, which gives the lustre, is then applied and the beautiful brilliancy is developed by rubbing with a tuft of cotton. The plaques and table tops are of wood. They are painted over with a ground color—usually a dull green or black, sometimes yellow or pink; this is somewhat polished and the designs are traced upon it—usually sprays of flowers and leaves; these are then cut out with a little knife or chisel; the colors are laid into these cut designs with the finger tips; line patterns, leaf nervation, etc., are done with a delicate brush; the lustre is then applied and developed. The mass used for lustre is derived from a plant louse—*Coccus aje*, of the Mexican authors—which lives upon a delicate-leafed leguminous shrub or tree. The insects are gathered in the rainy season and thrown into hot water: a waxy or gummy mass is driven out and skimmed off, washed to rid it of blood and dirt and made up into masses. It resembles a yellow or yellow-brown putty. Uruapan is the town most famous for lacquer work and—so far as I know—the only one where plaques and table-tops are made. Gourds are decorated at Quiroga. Gourds and *jicaras* are lacquered at Ocotlan in Oaxaca, certain places in Guerrero, and perhaps Jalisco. Chiapa, in the State of Chiapas is famous for its lacquered gourds and *jicaras* of all sizes and many varieties and there we have witnessed every stage of the work.

Goitre occurs at Uruapan in one ward—that of San Pedro. (*Inds. So. Mex.*, Pl. XXIV.) Six cases were examined. Of these three were men, three women. One of the men had a wife who was also goitrous, but their child was unaffected. Three out of the six cases were deaf: two were foolish or imbecile. One of the subjects—a woman of sixty years, unmarried—had two brothers, one of whom is a deaf-mute, the other goitrous. In the town of Capacuaro goitre is common. Almost all the persons seen there were affected: the town is purely Indian.

THE TLAXCALANS.

The modern State of Tlaxcala is the smallest of the Republic, having only 1,595 square miles area. Its limits are practically the same as those of the old republic of the same name, which gave assistance to Cortez, against the Aztecs. In 1895 the population was 166,803, giving an average to the square mile of 104.6, the densest in Mexico outside the Federal District. This population is almost purely Indian and the current speech is Aztec. The Tlaxcalans are industrious and thrifty. The state is dotted with little pueblos most of which bear a double name, part Indian, part Spanish—as San Nicolas Panotla, San Juan Totolac, Santa Ana Chiautempa, etc. The man who, now and for a dozen years back, is and has been Governor, Prospero Cahuantzi, is an Indian of pure blood who speaks Aztec as his mother tongue. The population of the state is agricultural but some local industries exist. There are important factories near Apizaco; Santa Ana has a great industry in heavy woollen *serapes* and *mantas*. Pottery is made at three towns: *ollas*, *braseros*, *jarros*, *tinajas*, in black or red ware are made at San Sebastian Atlapa; at Trinidad an unpainted yellow ware is made into *ollas* and *jarros*; a plain ware is made in *ollas*, *jarros* and *labrillos* at San Salvador del Seco. Lime is made at Los Reyes Tlahuiztlan. Canes are carved at San Estevan Tizatlan and sold at the railroad stations of Apizaco and Santa Ana. *Petates* of rushes are braided at Acuitapilco. Pulque is made everywhere. *Costales* or baggings are made at Santa Ysabel Xiloxochtla. The best *fajas* (or belts) are made at San Bernardino Contla and at San Geronimo. Those of Contla are of wool, while those of San Geronimo are of cotton. The latter are striped lengthwise and their cost is fixed by the number of stripes: one of three stripes is worth three reales, one of five stripes five reales, etc.

The houses of Tlaxcalan Indians are well built of abode bricks or stone. Nowhere is the three-part house idea better displayed. The old writers mentioned this peculiarity of Mexican Indian houses and Bandelier lays great stress upon its modern occurrence as a survival. Not only are three-part houses still built; they still bear the old names—*teopantzinltli*, *tezcalli*, and *cencalli*. Bandelier translates these terms—the little place of God, the house of the metate, and the house of ripe corn. The *teopantzinltli* is the most carefully constructed. It is a single, rectangular room, often with a firm, well-made floor and

neatly plastered walls; roofs may be flat, one sloped or two-sloped from a central ridge pole; the latter type is the more common; all sloping roofs are thatched with wild grass, *zacate*; sometimes the great pointed leaves, *pencas*, of the maguey are used in roof construction. The *tezcalli* is usually smaller and less well built than the *teopantzinli*. Its walls may be of adobes, or of stones daubed over and cemented with adobe clay; they may however, be made of lighter and flimsier stuff—poles, sticks, and mud. The *cencalli* in Tlaxcala is of a characteristic form and bears the special name of *cuezcomatl*. (*Inds. So. Mex.*, Pl. XLIV, XLV, XLVI, XLVII.) It is a vasiform construction of adobe or of clay which rises to a height of from five to ten feet. The construction varies somewhat with locality. The circular base is usually of stones, rather well laid in layers; this may be hollow, with a little doorway in front, and used for storage, but is more frequently solid. Above this base rises the great rounded and hollow body, open above; over this a neat, little, two-pitched roof of thatch serves to shed rain. The *cuezcomatl* is a storehouse or granary for maize on the cob. A ladder is used in storing or removing the grain. Occasionally parts of ancient stone idols, or even whole ones, are built into the wall of the *cuezcomatl*, sometimes certainly with the idea of its guarding or protecting the maize. (*Inds. So. Mex.*, Pl. XLVIIa.) Besides these three constructions, there is in most Tlaxcalan enclosures a *temascal* or sweat-bath. They are neatly constructed of stones laid with mud cement. They are dome-shaped, some three or more feet in height and six feet or more in diameter at the base. The floor is about at the level of the ground outside, but is sometimes scooped out into a shallow basin. An arch entrance permits entrance and exit to bathers creeping on their hands and knees. A little annex built against the outer wall serves as a fire-place; this has an opening which can be plugged up with stones and it communicates with the bathroom itself; a small aperture above permits smoke to escape. When a bath is desired a brisk fire is made in the fire-place, which is then carefully plugged up and sealed on the outside; after an hour's heating the bath house is ready. If an especial amount of vapor is desired water is dashed upon stones inside which have been especially heated; other water is poured in through a funnel or trough constructed in the wall; the heated water gathers in the hollow floor basin and a board placed across from side to side permits the bather to keep himself above this if he desires. While in the bath the bathers can raise their heads into

the upper, hot, portion of the chamber, or they can throw themselves on their backs and raise their feet or legs up into the hot air. A single bather may occupy the *temascal* alone, but, as the heating of it is a matter of some time and trouble, several are likely to bathe together. We have seen as many as five men and women in a *temascal* at one time. They are entirely naked, but a bunch of corn husks is placed between the legs and so held, with the legs, as to conceal the organs of sex. A second bunch of corn husks is used with which the body is rubbed or hot air is wafted downward from the upper part of the chamber onto the body. The sweat bath not only cleanses; it rests weary limbs, is considered curative of various diseases and helpful to women — increasing their fecundity.

There is little in Tlaxcalan dress to attract attention. The *serapes* and *mantas* made at Santa Ana, on hand or power looms, are much worn. The stuff used for the loose trousers and shirts of the men and the *camisas* of the women is purchased in the market or at *tiendas*, shops. Pretty decorations are worked on the *camisas*, but these will be described later. (See AZTECS.) The carving of canes at San Estevan is really an industry. The woods chiefly used are quince, coffee and *sabino* (a sort of cypress or juniper.) The size, carving and staining vary with the wood. The patterns employed are practically fixed and conventionalized; twined serpents in high relief, alligators, street carriers, scenes from the bull-fight, the national coat of arms, leaf designs,—are among the more common. The ground may be cut into panels, upon which the designs are left in low relief. Stains are used to color the designs. Backgrounds are often cut into pretty plaited or braided surfaces. Burning with a hot iron is one mode of decoration employed. Most of the canes are convenient for use, but some great clubs are cut from the light, white, *sabino*, which, while not heavy, are too clumsy for carrying. Such may measure almost or quite three inches in diameter, and though elaborately carved, sell for small prices. (Fig 19.) All the carving of these canes is done in the homes and by hand; a variety of little chisels, gouges, and knives are employed. (*Inds. So. Mex.*, Pl. XLVII b.)

During our last journey, (the Mrs. Frank G. Logan Expedition of 1900) we spent several days in visiting some of the Indian villages on the slopes of Mt. Malintzi. We were accompanied by Señor Quechol, himself a Tlaxcalan, born in one of these villages, but who has been liberally educated. Until he was thirteen years of age he knew no

Spanish but constantly spoke Aztec. Partly in the villages, but much more from this gentleman, many data were secured relative to the people of this region. We were especially interested in survivals of ancient life and thought. In all these towns Aztec is the common speech, though most of the men understand Spanish.

These people have many notions about the mountain on which they live. The etymology commonly given for *Malintzi* is *Malina* (corruption of the female name Marina) and *tzin* or *tzi*, the particle indicative of respect. Marina was the native woman whom Cortez encountered near the coast and who accompanied him as an interpreter to Mexico. She was a special favorite with the old Tlaxcalans,—at least she made a profound impression upon them, if we may judge from the curious series of pictures painted at the time of the Conquest and known as the *Lienzo de Tlaxcala*. It is believed by the Indians that the mountain is a beautiful woman who sits in a cave and lets her long hair stream down upon her shoulders; it is she who sends the rain and dew, the hail and snow; she is the protector of all. To secure her favor special men were selected (anciently: also see further for modern conditions) to bear her gifts—*jicaras* (cups of gourds or nuts), ribbons and combs for her hair, water jars, etc., etc.; all these were usually miniatures and not objects for daily use. The Indians still find, in the upper part of the mountain, these gifts that were left in the olden times. Not everyone might bear these offerings but only special men, officials, the *tesitlaske* and the *kiatlaske* (conductors of the hail, and conductors of the rain). It is the common belief that Malintzi still lives in her cave, which consists of vast galleries ramifying through the mountain. Here are ranged in lines hundreds of *ollas*, or water jars, in which she brews her hails and rains and where she stores fruits and grains and seeds. There are, it seems, many different kinds of hail, each consuming its special kind of plant product. The hailstones are animated and hungry: when they are sent forth by Malintzi they devour, each its own seed or fruit or grain, and carry back to the cavern and store in the great *ollas*. (See further on Malintzi, in connection with the third great superstition).

Columns of whirling dust, so common in our own arid region, are frequent in many parts of Mexico where they are known by the Spanish name of *remolinos*. At times, on the sandy plains lying to the east of Malintzi a dozen may be seen at once and even on its slopes they are numerous. In Aztec they are called *ecamalacatl*—from *eca*,

air and *malacatl*, a spindle. Some believe that they are really spindles set a-whirling by dead souls: others think them the souls of the dead themselves. When they are seen upon the great *haciendas* it is believed that they are the souls of restless former proprietors, which have not yet entered heaven. Shepherd boys delight to stone them as they whirl past but parents warn them not to interfere with the *ecamaac atls* lest they be harmed or even killed. A rainbow is called *cosomalottl*, the etymology of which is not clear; it is suggested that it may come from *cosomalotic*, a term applied to a person who is pale, as also to a plant without chlorophyll. It is believed that trees on which its base rests will dry up and become sere. To point at a rainbow is dangerous: the finger is likely to shrink and die. The Indians do not kill humming birds, believing that to do so will cause a thunderbolt to fall upon the offender.

Señor Quechol says—"the great superstitions are four in number—*Tetlachiwike*, *Tlawwelpochime*, *Kiatlaske* or *Tesillaske* and *Nahuatl*. The *Tetlachiwike* are witches. They can harm people or render them ill by a touch or glance. Belen on the slope across the Sawapa from Malintzi is famous in all the country round as an abode of them. No more than five years ago in Ixcotla was a family in which the favorite daughter and the daughter-in-law were not on good terms. After a time the daughter began to suffer, first in her leg and then in her arm from a painful and wasting disease. Physicians who were called could do nothing to relieve her. After she had suffered for two or three years her friends consulted a female witch at Belen. She placed a piece of alum in the fire: it assumed a peculiar shape. On examining this the witch claimed that it was the portrait of the daughter-in-law of the family and declared that she was the person who was causing the disease. The matter was dragged into the courts. Two points were propounded for decision:—the possibility of witchcraft and the identification of the alum portrait. The weight of opinion, that of the judge and the witnesses, leaned strongly in favor of witchcraft: one fact only prevented unanimity of opinion. The sufferer asserted that her pains were greatest on Thursdays and Fridays; this argued against witchcraft, as it is well known that witchery cannot be practiced on those days—as on the former Christ was apprehended and on the latter died. Not long afterward the unfortunate girl died. The *Tetlachiwike* are usually careless of personal appearance and go unkempt; they have little to do with their neighbors, except profes-

sionally. They may operate, in witchery, through representative figures, which they fill with spines or otherwise abuse; these they conceal in fields or lonely places known only to themselves. They may treat disease, each practitioner having his own favorite methods. One treatment much in vogue among them is to puff a bladder full of smoke through a reed and then to inject the smoke into the anus of the patient. They make a considerable use of herbs in infusions, preferring such as have an odor or contain a resin.

A complete study of modern Aztec medicine would be interesting. Father Sahagun gave a good description of that of his time. We have made some study of the folk-medicine of the *mestizo* Mexicans and have compared it with the medicine of the old Aztecs as shown in Sahagun's account. The paper will probably be published as a Bulletin of the Department of Anthropology of the University of Chicago. But of modern Aztec practice we can add little to the remarks already made. *Mestizo* mothers commonly hang little pouches or sacks about children's necks to guard them against disease and harm; these contain holy ashes—from burned palms, etc. Among the Aztecs similar sacks are hung at the baby's neck for a similar purpose, but they contain *chapopotl* or bitumen. These little sacks of *chapopotl* may be worn singly, one at the neck, or in pairs at the wrists. Such bags are called *piall*, guard. *Chapopotl* is bought at the markets or *ferias* from Indian dealers in *remedios*, who are generally called by the Spanish name *arbolarios*. Their remedies are chiefly herbs. These Indian dealers rarely have a settled place for selling, but drift from *feria* to *feria* with their wares. Among the favorite plant remedies sold by them and widely used among the Indians are:

Ixtayatl: a metre or so in height, with long and narrow leaves which give out a bad odor when bruised; this is used for diseases due to the air and for the eyes.

Sotzonitzatl: a small bush, of bad odor, which bears many white flowers, used as a purge.

Tlamacas: a large herb, with downy leaves which become sticky when crushed in the hand; used for diseases due to the air and for ear troubles; is crushed and placed in the ears or snuffed into the nose.

Iollochichil: the leaf is heart-shaped, and although green at first becomes red at the centre with advancing age; it draws and cures wounds; it is applied moistened with saliva.

Tojonchichil: a small plant with bad odor.

Altamexa: "plant of Santa Maria:" used for ear troubles due to air; the leaves are bruised or ground and put into the ears. Though used by the Indians, this remedy is *more* used by the *mestizos*.

Ijichcatsi: very small and delicate plant, with little leaves; it produces a sort of oil; it acts quickly, like a caustic on the flesh; it is used for curing eruptions and small swellings.

All the above are used as herbs: of the following the seeds or fruits are used:

Atecomatl: something like a calabash, but not edible; the seeds, steeped in water, are serviceable in stomach troubles; pieces of the hard shell are said to be inserted in broken skulls as substitutes for bits of bone.

Cuatecomatl: round seeds, smaller than the preceding; they are steeped to make an infusion which is used for headaches and diseases of children.

Chichilitl: the seed is like a red bean and is generally considered poisonous; its infusion is used in healing and producing witchcraft; the seeds are also roasted and powdered.

The second great superstition of the modern Aztecs is *Tlauwelpochime*. These are female beings who love the blood of young infants. They are much feared and mothers take much pains to guard against them. They prefer to suck the blood from the back of the neck; they also draw it from the sides of the neck or the cheek; they may not, however, take it from the chest or lower body. A child which has been attacked, presents a wee purplish spot at the point sucked. *Mestizo* mothers protect their babes by pictures of saints, but the Indian mother places some bad smelling substance, like onion, in a little pouch hung about the child's neck. These bloodsuckers sally from home through the keyhole or some crack and enter houses in the same way. While on their errand they assume the form of a turkey, but in flying through the air—which they can do only at night—they appear as a moving spot of phosphorescent light. After flitting from place to place and sucking their fill, they return home, vomit the blood into a *casuela*, cook it over the *brasero* and then finally devour it. It is the custom of these beings, when preparing to go outside, to light the fire and set the *casuela* upon the *brasero*; then to scrape off and separate their feet, which they leave behind near the fire, as we might leave shoes.

Once a woman, hearing a noise in the next room at eleven at night, rose and peeped to see what was happening. She saw her neighbor set out her *brasero* and *casuela* and lay off her feet; watching until her return she saw the creature again put her feet on. The next night the watch was resumed: again the *brasero* and *casuela* were set out and the feet put off. As soon as the bloodsucker was gone the watcher broke into the room and, seizing the feet, placed them in the fire where they were burned. The next day the dead body of a turkey without feet was found lying near the roadway. Rarely the creature wanders forth in the daytime. Once a mother was busy at home making *tortillas*. Suddenly she heard the babe scream and, rushing in, saw nothing but a cord or thread dangling from the ceiling. The babe's face was discolored and gorged with blood. On touching the thread the mother found, for the first time, that it was fast to the child's neck. Seizing a pair of scissors she cut the cord, when the bloodsucker was at once seen, lying dead in the form of a turkey.

The third great superstition is *Kiatlaske* or *Tesitlaske* — conductors or bringers of rain and of hail. These receive their power from Malintzi. The same man may be both a bringer of rain and a bringer of hail. They are the only human beings who have regular access to the caverns of Malintzi, whither they bear the gifts intended for her. In March of each year these men in each village are summoned before the *Principales* where they make public promise that rain shall not fail and that hail shall not fall. If these promises are not well fulfilled the *Kiatlaske* or *Tesitlaske* are held to have broken a contract and the case may even be taken before the courts. At the time they make their contract they are given bread, corn, seeds, and *pulque*. If during the season of rains the clouds on Malinche do not drop, if showers go elsewhere, but not to the pueblo, the rain-bringers put rabbit skins over their faces and raincoats over their shoulders, go out and face the cardinal points, prostrate themselves and repeat their formulas. The villages of San Pedro, San Bartolomé, San Francisco Tetlanoca, and Akxotla are famous for their rain-bringers.—There are two insects which are particularly harmful to the growing crops: they are called *mamayatl* and *ocuilittl*. The rain-bringer gathers a quantity of these, or receives them from the Indians who bring them in, puts them into an *olla* with water and steeps them. He pronounces a formula over the brew and then pours it out over the plants in the field, thus ensuring protection against the pests. The priests of Rome have in some

villages usurped the functions and trade of the old rain-bringers. In place of the greeting of the cardinal points, the prostrations and formulas of the old rain-bringer, the following ceremonial is seen: the priest, at the beginning of the year, goes about with bottles of holy water which he places at the limits of the field, at the same time repeating formulas of exorcism. This he does to secure rains. It is interesting to observe that the Indian uses the same word *tlatapantisk* for both ceremonials—pagan and christian. As to the other matter, the priests receive the *ollas* full of insects, which they bless and exorcise: they then prepare the brew and use it in the same way as the old rain-bringers and with the same happy result.

The fourth great superstition of our Tlaxcalans is the *nahuatl*. This is a male being, who is a robber and capable of indefinite self-transformation. He steals *jilotes*, or ears of maize, and other vegetable products, domestic animals from the corral or objects from the house. He cannot however steal a dog. In his transformations he is likely to appear as a dog, an ox, or as a mere shade or phantom. He is said to possess great strength and it is dangerous for people to attack him: he can easily fell a man with a blow, but this is never fatal. It is best not to trouble him. Young men who prowls about a-nights, often hear a distant noise, which rapidly approaches: hidden behind a tree or a plant of maguey they see a great black dog rush by. It is a *nahuatl* (nagual) but they do not trouble him. It is evident that the first and third of these "superstitions" are real human beings but the confidence of the Indian is just as strong in the second and fourth as in the others.

There are especial customs connected with birth, marriage and death. As regards birth:—The moon has a great influence over pregnant women: as is its face so is that of the child to be born. Should an eclipse occur the child will be born imperfect—usually with some part of the face wanting. The name *tenqua* is applied to hare-lip and is derived from *tentli* (lip) and *qua* (bitten). The word for eclipse is *metzqualotl*, from *metztli* (moon) and *qua* (bitten). Pregnant women, at times of eclipse, hide themselves to prevent harm to the child. Should some accident happen to a pregnant woman, she may produce a monster. Twins are called *coatl* (snakes) and they are believed to be able to cure *shochal* (see later) and the bites of venomous serpents or other animals. Triplets will be kings. There are special streams in which women bathe to ensure fecundity. Such a stream is the

Sawapa. In this stream also many Tlaxcalans bathe in the month of May to prevent or to cure smallpox. It is also believed that bathing in the *temascal* aids to fecundity. The welfare of the child is considered to be in some way bound up with the umbilical cord; when this is cut it is carefully buried in the ground, care being taken to place it where it will not be likely to be dug up by a dog or other animal. When a man shows skill or industry in a pursuit there is a common saying—"Oh, he was a worker from the cutting of his umbilical cord." As soon as a child is born the midwife carries it outside the house and—after blowing in its ears—holds it up to the sun that it may be strong. The grandparents at once go out to seek god parents. They carry a candle and flowers; arrived at the house they use a set formula of invitation:

"O ti hual pano aya no han tzinco y pampa to teotzi que teah mo maquilía nin toha o ti hualaia ti mo tonquishtiquihue que y' o tecuin huan o shollac ni shochitzintle. Ti mo tlallatia ma itcoh huetzi ahua huachtzintle ma qui mo ara yatequili huan ma qui zeli achopahualott de to fe."

Translation: "We have come to your door. Since God permits our existence we bring to your house this flower which has just opened: we beg that you shall bathe this flower, just blown, with the pure dew of our holy faith."

The person addressed replies "It is God's will: we must perform it." For, in no event, ought one to refuse such an invitation. The flower is placed in water upon the table and the candle is lighted. This is done as a token of assent and is symbolical. The freshly blown flower typifies the new born child and the lighted candle typifies the illuminating religious doctrine, which they agree to teach.

The christening takes place at night at the home of the parents, soon after birth. If it is delayed the child will be shrewd, smart and wise, but these are not desired qualities. At the christening presents are made by the guests to the mother and the god-parents. As soon as the child can learn he is taught the Christian doctrine. This instruction is usually given by a special class of men known by the Spanish name of *doctrineros* or the Aztec name *teotl tlátol machtique* (god-word-teacher). The parents when first bringing their boys to these men hand them over completely into their authority and beg them to beat the children severely if they do not learn or give any cause of offense. The boys go daily to these *doctrineros* for instruction, before going out to the fields for their work. The instruction may be carried

on into young manhood. The *doctrinero* may be an intelligent and thoughtful man — or he may be quite the opposite. He is often illiterate and has himself learned the *doctrina* by oral tradition. In the community a boy's standing is judged by his progress with the *doctrinero*. He may be called *icnopil* — docile boy or *ishtekikisk* — never-lowers-his-face, i.e. a disobedient or insubordinate person. The *doctrinero* may retain an influence long after a boy passes from under his instruction. For example, in case a man is persistently immoral or drunken his wife may go to the old teacher and addressing him by the title *tatita* (affectionate and respectful form of *talli*, father) tells him her complaint. Though he has no official right or authority, his power will not be questioned; he summons the offender and administers a scolding and severe beating.

Marriage is held in respect and esteemed a religious duty. Persons of suitable age who are not married are not respected and are called by a term of reproach — *ahuilisnenk*, equivalent to "vagabond" and literally by etymology "man who plays with the world." In love making pretty phrases are used and presents are exchanged: such presents are usually flowers or trifles bought in the market. The young man never asks directly for the girl but when he has made up his mind his parents go to the *piscal** and the priest and ask them to apply for the girl's hand. They go, accompanied by the *topiles*, in the early morning or at night to make sure of finding the father at home. The girl knows of their coming and usually has her hair neatly dressed, wears her good clothing, and has cleaned up the house well. The party ask the father for the girl and he has the decision entirely in his hands. If he gives his consent, the young man's parents promptly send him a present of considerable value — consisting of bread, flowers, seeds, meat, etc., etc. This present symbolizes abundance and is called *tlasesehuil* — satisfaction or expiation. The gift is divided among the family. On an appointed day, preferably Monday, the church ceremony takes place. The bridal company goes from the church, walking through the village, to the houses of the godparents where all partake of refreshments. This sometimes fills up the whole time from eight in the morning to three or four in the afternoon. All then go to the house of the groom where a great feast is served. When this is carried out with full ceremony two days are occupied with it. The first day *totomol* or *mole de guajalote*

*For this official see further.

is the characteristic dish; the second day *tlilmol* or *mole prieto*. The latter is a dish which may not be used for daily use but is reserved for weddings and the public dinners of the pueblo. On Wednesday the bride passes through a dreaded ordeal or test — *temaitalistl* = to-see-the-hand i. e. to see the skill. All the neighboring women gather and watch the girl prepare and grind maize, make *tortillas* and prepare *atole*. The inspection is always critical and may be ill-natured.

During Monday and Tuesday of the wedding celebration there is much singing and dancing. The songs *Malintzi* and *Tlaxcaltecatl* are favorites on these occasions. Many of the songs then sung are more or less burlesques and jocular. At the same time much practical joking is indulged, some of it rather severe. On Tuesday night after the festivities, when the company is dispersing the family of the groom sends a great basket full of food — chiefly meats, especially *guajalote*, decorated with flowers and ribbons to the family of the bride. This gift is keenly inspected by all present and the value closely estimated. At Cholula (not in Tlaxcala, but an important Aztec centre in the State of Puebla, and near Tlaxcala) it is customary, in the procession from the church, for the groom to carry a hen, the bride a cock in their arms. These are alive and are carried throughout the visit to the houses of the godparents. Sometimes a turkey is taken instead of the commoner fowls but when so it is driven, not carried, and is decorated with flowers and ribbons. The spectators are wont to take an omen from the actions of this bird; if it goes straight and gives little trouble to the drivers, the married life of the newly married pair will be happy. In this same district a man often goes along with the bridal party, who plays the spoiled child. He is called *monenic* and the crowd teases him, talks baby talk to him and slaps him. In marriage and in ordinary life the woman is considered man's inferior; the best word for marriage in the language is *mosetillis*, which in meaning "to make themselves one" suggests the obliteration of the female.

Mention has been made above of the song — the Tlaxcaltecan. At San Francisco Tetlanoca where we first heard it sung and saw the characteristic but simple dance that accompanies it we copied the words of its several stanzas. Señor Quechol is a musician, a teacher of music, and he was good enough to take down the simple air, in the field. Later on at home, of his own fancy, he put the piece into part form for the piano. The air is probably accurate enough and the written form is interesting as presenting a native piece of music put into form by a pure-blood Indian.

The verses follow:

Tlaxcaltecatl, no zohapilé
 Tlica huel tomo tenehua?
 Tlica n'amo ni mo tenehuas
 De Tlaxcala ni hual ehua.
 Celic xochitl caxtillan xochitl
 Ceceyaca mo macacabua
 Ma sanguel no namic—tlasotzi
 Semanahuactl, tla' juya ya.
 Y' onic itac ce citlali
 Tepetzala hual quistihuitz
 Y' onic itac no *malintzi*
 Tlaczala hual buetzcatihuitz.

A fourth stanza was copied but is so much mixed with Spanish words as to present little interest.

The customs connected with the dead are interesting. It is believed that the soul after death journeys to the hereafter: good souls follow a straight and narrow path, bad ones a wide one. Both ultimately reach a deep and broad river, which can only be passed by the help of a dog, which takes the souls upon his shoulders and bears them over. The souls are obliged to await the pleasure of the dog and bad souls are refused transportation. It is customary to treat dogs well in this life, in hope that thus one may not meet refusal from this canine carrier. Commonly a coin is placed in the mouth or hand of the dead, to be given to the dog. A dead child is usually finely dressed for burial, often so garbed and ornamented as to represent a favorite saint; music and rockets accompany it to the grave. Adult dead are often dressed in the habit of the Franciscan or Dominican monks. While bells are rung in honor of all adult dead they are rung doubly (in special fashion) for persons of especially devout lives. The Feast of the Dead — so interesting among the *mestizo* population is even more so among the Indians. The festival is called *techalistl*, which means to watch or guard. Preparations are made beforehand. A wide path is cleared through the field to the house, over which the souls may pass. The first to arrive are the child souls. These begin to arrive at 3 P. M. of Oct. 31, and come through a full day. At 3 P. M. Nov. 1 the souls of the adults arrive. At 3 P. M. Nov. 2 all depart. The first day is given up to the children. The markets are filled with toys and *dulces*, things dear to the child heart. These are brought to the home where a little table or a clean and unused *petate*

(mat) is set out. The little treasures are arranged upon it. The father places sweet copal gum in the censer and incenses the place. The mother carefully arranges and divides the gifts and calls on one and another of the little dead by name — “My Juanito, here is your feast; here are your toys.” “My little Maria, come take your things.” This is called *tlatetecalistl*, “the distribution or separation of the meal.” The door of the house is left open lest the little souls shall find themselves shut out. No one disturbs or touches the gifts. They say that once a little child stood and looked longingly at a dish of *dulces* meant for the little souls: finally he yielded and touched to take. Immediately the fingers reached out to grasp were destroyed. The second day the table or *petate* is larger. Food and drink is set out and care is taken to select food especially loved by those whose souls are to come. Their *ayate* or carrying cloth, staff or favorite garments may be laid near by. Special kinds of bread are baked for these funeral feasts. When finally the dead depart, there is an irruption of living persons — *kwatliltike* — “black headed souls” — who proceed to eat the feast. It is believed that the souls can hear but cannot see and therefore persons are careful of their remarks during the ghostly visits. There was once a drunken husband who greatly abused his wife. Among other cruelties he refused to give her money to buy candles and gifts for her dead parents. Angrily rebuking her for her belief in such follies he shut her up and went onto Malintzi to gather wood. While splitting a tree trunk the log parted and then flying together caught him. He passed into a state of vision, in which he saw a great procession of souls coming up the mountain. They joyfully carried gifts — candles, food, etc. At the end of the long line, sad and dejected, with no gifts in their hands came the souls of the parents of himself and his wife. Alas, he thought, we have given them nothing, but it was too late for repentance, the day of the souls was past. When dogs bark at night it is because they see a passing soul. When food or drink in a room appears to be diminished the family are pleased as they believe souls have been and taken. The souls of women who die in childbirth go to a river where they abide; passers in the night may see them working at clothes washing; they are beckoned to and invited down to the river side — but for them to go is death. A yellow composite flower, much like a *zinnia*, called the flower of the dead, is much used in decorating the tables at these feasts; they are never given to living people for gifts. Sr. Quechol

says that the name Chihuahua — that of an important city and state in Northern Mexico — is a corruption of *chichihuaquaco* from *chichua-quatchtl* and *co* — meaning “where the trees bear *chichis*” (i. e. teats or breasts). They say that when children die while still sucking they go thither: there the trees have breasts and the little ones clinging to the trunks suck milk. Whether the town in question derives its name as suggested, the existence of a place where the trees suckle the little dead is fully believed.

Mention has already been made of the breads of special kinds used at the feast of the dead souls. Such breads are regularly sold in the Cholula market at that time. Among them are *tlacotonal* (bread cut in figures), *pan tochtl* (rabbit bread, named from its form), and *pan mail* (hand bread, made in shape of a hand). At the same market many toys are sold made of baked clay and colored with yellow, red, and green pigments derived from plants by ancient and native methods. The color is produced from leaves or fruits, mixed with lime and applied. There is a great trade, at its season, between the men who bring in these plants from the country and the potters who make the toys. The favorite form of these toys is the *totorotl*—a strange word, being an Aztec diminutive noun from a Spanish word—or little bull.

From certain points in the preceding presentation of modern Aztec life it is plain that the people have still much of the ancient fondness for metaphor and poetical language. This tendency in speech is notable and is fully appreciated by the people themselves. Everyone delights in striking and expressive figures, in symbolical language and in expressions which, while terse and simple, are capable of two meanings, one less evident than the other. There are men who are famous for poetical expression or for epigrammatic statement. At Ixcotla is a fine old man now eighty years of age, known and respected through the whole district, whose language abounding in metaphors and flowers of speech is considered a model of elegance. The old man's observations are quoted far and wide. A single example will serve to indicate his thoughtful character. The old man lives alone, his wife having died years since and his younger relatives having moved out into more busy centres. Some one once spoke to him of his life as lonely, solitary. The old man replied: “Alone and solitary? No, we are three here!” “Three?” “Yes; I am never alone! Here am I myself, my good angel and my bad angel.”

They are fond of trite expressions, old saws, proverbs. They have a sense for dry humor. The word for such expressions is *ahuiltlatl*—playful saying. If meat is tough and hard they say it is *chicahuatl*, i. e. "strong." Of tough beef they might laughingly remark *ok huelitis tlatotocas*—this bullock might horn a man; of tough goat meat,—*huelitis kistikisus*—this can surely leap. On festal occasions there is a man whose duty it is to distribute the food and drink to the company. He is called *camatiachca*—from *cama*, mouth and *tiachca*, master, the mouth master. He passes from person to person offering the viands. It is proper to refuse him for a time but he urges, using the expression

Campameya

Pehua,

which can be translated perhaps as *after water once gushes forth it will flow all right*. It seems equivalent to saying "come, come, you must make a beginning." A very common proverb is:

Pani tlapetlaca

Tlani tlaquauhquahlaca.

This may be translated—*outwardly fine, intestines crying with hunger*. It is said of persons making display beyond their ability. The form of this proverb should be noted. It is a double rhyme. The first halves and the last halves of the lines rhyme. This special form of rhyming is a favorite in proverbs. It occurs again in the saying:

Ichan ahuacatl

Techan malacatl.

The *ahuacatl* is a common fruit; here it symbolizes neglect or abandonment: the *malacatl* is the spindle and here it symbolizes industry, energy, push. The translation may be—In one's own house neglectful; in the house of another industrious. One neglects his own affairs, but busies himself with those of others.

Techqua pepetzotica

wan techqua tetetzilotica.

Here the double rhyme is imperfect, but the finals rhyme well. The word *pepotzota* indicates to caress, as a cow caresses a calf in licking its head. *Tetetzilotico*, signifies to wrap up or envelope, to wind about as with thread. The proverb may be translated—He caresses us that he may envelope us. It is applicable when a person, to gain his own selfish and harmful ends, uses flattery.

Tla ochauwisoac

Yo ahuiloyuac.

Chauwistl, is a hot wind that shrivels the plants: it is an "ill wind." *Ahuiloyuac* = "it has become a bad luck," it has no importance. The proverb may be translated *freely*—If he has begun to have ill luck, he has become of no importance. It would suggest that misfortunes never come singly and never cease. Occasionally in proverbs an expression or word felt to be indelicate will be omitted although everyone must clearly have the whole figure in mind by the quite innocent words which are used. A very common expression is

Cuentla den kashitl

where the verb preceding is omitted. It may be literally translated *outside the chamberpot*. It is used when a man does not speak to the point, but rambles from his subject and talks all around it. There must be hundreds of modern Aztec proverbs, but these will serve to illustrate their character, form, and use.

Among the towns in Tlaxcala, and to some extent in all the Indian towns of Mexico, there are certain grades of dignity to which a man may attain and to the lower ones of which all men must attain. These grades are related to church and civil affairs and in their present form must be somewhat modified by Spanish and priestly influence. They are six or seven in number.

Topil. From *teotl* (divine or sacred); *pilli* (child). Boys at eighteen became topils and served as messengers or servants to the church and town.

Tekitlaktok. From *tekittl* (work) and *tlatok* (crier). He accompanies the *fiscal* and stimulates workers. He cries out the public work.

Tlanechikok. Collector.

Mayor Domo and his lieutenant. I do not know the native name of these two officers. They go together and twice a year give a public dinner to the pueblo. These dinners are highly important and have special names. *Centlalli* is the dinner at which these officers announce to the people their duties, work, and tax dues: *tominnechicolistl* is the dinner to which the people bring their dues.

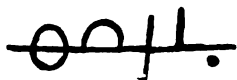
Pixcaltzi or *Fiscal*, The highest dignity in the pueblo. Ordinarily he serves but one year but occasionally two: e.g. —Isidro, who denied ever being alone, was honored with the position for two years. This dignitary may call the town together whenever there is business of importance. He is elected by those who

have "entered upon their career"—i.e. who have been a *topil* or some higher official.

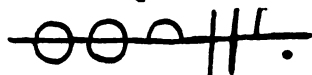
The present Tlaxcalan and Aztec counting of money is somewhat curious, being a mixture of Aztec words and Spanish ideas and the combination, rather clumsy and lame, of two systems of numeration based on 8 and 10. The word *tomi* means a money unit and is used as equivalent to a *real*. A *real* is $12\frac{1}{2}$ centavos of present Mexican money: eight reales make one peso—commonly called by us a Mexican dollar. There are today in use in Mexico pieces of 5, 10, 25 and 50 centavos and 1 peso: also of 2 reales and 4 reales (these equal to 25 and 50 centavos respectively). A medio and cuartilla are half and a quarter real and are made out usually with coppers. The Indians count money as follows:

ce tomi one money (real).
 ome tomi two monies (reales).
 yei tomi three.
 hahui tomi four.
 macuil tomi five.
 chicause tomi six.
 chicome tomi seven.
 chicue tomi or one peso eight monies or one peso.
 chicnahui tomi nine.
 malactli tomi ten.
 ce wan yei one (peso) and three (reales).
 ce wan nahui one (peso) and four (reales), etc., etc.
 ome peso two pesos.
 ome wan ce, etc., etc two pesos and one.
 yeyi peso three pesos.
 yeyi wan ce, etc., etc three pesos and one.

The curious irregularity and misfit of the two systems is seen at nine and ten and a lack of analogy shows itself at seventeen reales, etc. In marking down money transactions the Aztecs, most of whom, of course, cannot read, have worked out an ingenious system which I have not seen described. A horizontal line is drawn. A circle marked upon this signifies a peso; a half circle 50 centavos or 4 reales; a straight mark across it a real or $12\frac{1}{2}$ centavos; a mark reaching, but not crossing it, 6 centavos and a dot below it a cuartilla or 3 centavos. Thus



presents the series of characters.



is \$2.84.

This already long description of the Tlaxcalans may be closed by presenting a few ideas and notions commonly held. We have already stated that twins can cure *shochal*, i. e. inflammation or pain of the tendons, especially of those of the feet or ankles. It is caused in this way: when a weary person passing along the road stops somewhere to rest, he may pluck a handful of grass and rub or strike his feet with it to relieve their weariness; if another person coming along the road touches the bunch of grass thrown away by the other he not only gains the weariness of which the other was relieved but also *shochal*. When the Otomis visit great sanctuaries in the State of Tlaxcala or Puebla, they frequently relieve their weariness by using grass in this way and near the shrines there are many such tufts of grass in the road. Tlaxcalans going to these sanctuaries watch for these and often will go out of their way to avoid danger of touching them for fear of *shochal*. Stone piles or cairns are not common along roadsides in Tlaxcala but where they do occur they believe the placing of a stone prevents and cures weariness, that it protects against ill luck and that to intentionally refrain from placing one is to invite misfortune. If a coyote shuts its teeth together at the moment a hunter takes his aim the bullet cannot leave the gun. Unusual howling of coyotes presages national disaster; the coyotes are said, by howling, to have foretold the battle of Puebla. Coyotes can render persons incapable of motion.—The eggs of a sort of mosquito are largely gathered at Lake Texcoco and sold at San Pablo and other Tlaxcalan towns. After being dried and washed they are used in various ways for food—chiefly in sandwiches. They are much used and the people claim that there is a compensatory relation between maize and *awactli* in price and supply: when there are many *awactleros* (dealers in these eggs) with their baskets full of *awactli* and the folded serape on top corn is dear.

THE AZTECS.

There are people of Aztec blood in the Republic of Mexico from the State of Sinaloa in the extreme North-west to the State of Chiapas in the South. In Sinaloa, Jalisco, Durango, San Luis Potosí, Colima,

Vera Cruz, Hidalgo, Oaxaca, Chiapas and Tabasco they occur, while the states of Guerrero, Mexico, Tlaxcala, Morelos, and Puebla are in large part occupied by them. In some districts Aztec is the common language. In the Republic there are probably more than 1,500,000 pure blood Indians who speak the Aztec language (this includes the Tlaxcalans). We have already in treating of the Tlaxcalans said much that is equally applicable to the Aztecs generally. Our physical study of the Aztecs was made at Cuauhtlantzinco in the State of Puebla. Considerable about them will be found in our *Mapa de Cuauhtlantzinco* and *Indians of Southern Mexico*. In the latter work at Plate XXXIV is represented an extinct geyser cone of sinter which stands in the open field, in sight from the tramway and railroad, between Puebla and Cholula. It is nearly or quite thirty feet in height and presents a neatly rounded form; the summit opening is nearly thirty feet across, and the walls at twenty feet down contract to about twenty feet diameter: at six or ten feet below this is the bottom, which seems to be lower than the surrounding level. From this bottom rises a mound of fallen rock and earth; among the debris scattered over this and the flooring are bones of animals and human beings. To one side of the crater bottom is a pool of bluish white water that yields a smell of sulphur. This interesting old crater is commonly called the *cuescomatl* by the Indians, from its resemblance to their granaries. The weaving of wool, now an important industry at Santa Ana, in Tlaxcala was introduced there by a man named Barela. He was an honorable and honored man, who left money for supporting a girls' school, still in existence in Santa Ana. His wife was a selfish and avaricious woman. She objected to her husband's benevolence and was greatly hated by the people. When she died they tried to bury her body at the famous Sanctuario of Ocotlan; twice the earth rejected her. The body was then thrown into the river Sawapa, which immediately overflowed its banks and left her stranded on the shore. The Bishop then advised that the body should be thrown into the *cuescomatl* which is believed to be the very gate of hell. It is said that the demons swarmed up from below to seize the corpse when it was brought there.

The dress of the Aztecs at Cuauhtlantzinco is not generally characteristically Indian except as regards the decorations upon the *camisa*. In some of the more remote pueblos it remains nearer the primitive condition. The women of Tlaxcallantzinco wear elaborately and pecu-

liarly embroidered *huipilis* or *quichiquimels*. The women of many remote pueblos wear a skirt of coarse white cotton which is embroidered along the lower edge with geometrical designs in black and red. Over this, but short enough to expose the decoration, is worn an *enagua* of black wool, well woven, close and heavy. This is usually about three yards long and $2\frac{1}{2}$ feet wide: along the upper edge is sewed a strip of cotton several inches (6 to 9) wide. This garment is simply folded around the body and held in place by a belt or *faja*. The most characteristic piece of woman's dress, however, both in the district of Cholula (state of Puebla) and in the state of Tlaxcala is the *camisa*. This is a low necked and short sleeved shirt or chemise of unbleached or bleached cotton. The neck slit and the edges of the arm openings and the sides are decorated with designs worked in red or blue; bands of cotton, separately worked with elaborate patterns, are sewed onto the *camisa* — one just at the neck border in front, a narrower one at the lower edge of the short sleeve and a third still narrower at the upper edge (shoulder) of the sleeve. Of course these two last are paired. These decorated strips are made up in sets, five making the set. Cholula is famous for the manufacture of these. Those made there are rather coarse, and are generally made with red or blue wools. The method of work is curious: it is not ordinary embroidery but it is practically weaving done with a needle. The colored thread is carried horizontally through the fabric; it passes under a certain number of the threads and over a certain number, etc. The patterns are left in white by passing under the threads that compose it. The work is tiresome and time consuming. Outside of Cholula, and common in Tlaxcala, we find much work done in the same way but with black silk — the result being smaller and more delicate. The patterns worked on these decorative strips are geometrical, birds, or animals. (Fig. 13, birds; 14, dogs; 15, birds, geometrical and plant.) Some of these worked bands from Cholula, with similar designs, are made by sewing different colored beads upon the band until the groundwork is entirely concealed. (Fig. 16, deer and floral designs.)

The ancient Mexicans had two kinds of drums—the *huehuettl* or upright drum and the *teponastl* or horizontal drum. The former was made in several sizes and was called by different names according to size. It consisted of a hollow cylinder of wood cut, anciently, from a single tree trunk: it was cut away below to give three supporting

feet and had a membrane stretched across the top. The ancient ones were frequently elaborately carved. The *teponastl* or horizontal-drum was cut from a single log, which was cut to taper toward the ends: it was hollowed out below until the central part was a mere thin layer, which was then cut to two lips that were separated from each other by a narrow slit. These ancient instruments have largely disappeared: now and then, however, examples may be found in the Indian towns. The *huehuell* is used on festival occasions at many Tlaxcalan and Puebla towns. Fig. 17 represents a *huehuell* from Cuauhtlantzinco which was claimed to be some thirty years old. It is constructed of boards set upright and united instead of being cut from a single block: it is painted a bright blue. It measures 2 ft. 8 in. in height and 1 ft. 4 in. in diameter. The *huehuell* is beaten with two sticks with padded ends. It makes a great noise audible to a considerable distance. The specimen shown is about the usual size. We do not know of *teponastls* in Tlaxcala, though curiously the *huehuell* is erroneously called by that name in that region. It does, however, linger in Indian towns in various other regions. We have seen it about Lake Patzcuaro. Fig. 18 represents a *teponastl* from near Guadalajara. This is cut from a single log or block of heavy wood: it measures about 2 feet and 6 inches in length and some 8 inches in diameter at the end: the lips are 10½ inches long and 3 inches wide. The *teponastl* is beaten with a single padded stick, the two lips being beaten with it alternately or in proper time. (For further remarks on these drums see *Popular Celebrations in Mexico*: Jour. Am. Folklore; vol. IX (1896), pp. 162-163.) These drums when used in festivals are usually accompanied by the *chirimíya*. This is a pipe or horn of wood flaring at the outer end and with several finger holes along the side. Bandelier considers it an originally native instrument: Brinton does not. A *fiesta* band in San Juan Totolac (and in other Aztec and Tlaxcalan towns) comprises a *huehuell*, two *chirimíyas* and a *tambour* or European drum. (*Inds. So. Mex.*, Pl. XLVII.) On the slopes of Malintzi the shepherds use a stringed instrument, the *camalpa*. It is the musical bow, which has been so interestingly studied by Balfour.* It consists here of a simple cane some three or four feet long: a string is fastened to one end of this and is rendered taut by a tightening peg at the other. It is played by vibrating the cord and manipulating with the mouth. Señor Quechol, who showed me the mode of use, believes from the name

**The Natural History of the Musical Bow*. Oxford. 1899.

that the instrument is post-Conquest in Mexico. His etymology of the word is *cam*, mouth: *alpa*, corruption of the Spanish *arpa* (harpa)—a mouth harp. Balfour illustrates this identical form from Patzcuaro.

THE MIXTECS.

The country occupied by the Mixtecs extends eastward from the Pacific Coast into the high mountain country of the interior. Their territory lies within the states of Guerrero, Puebla and Oaxaca but chiefly in the last. It is commonly divided into two districts—the *Mixteca alta* or high Mixteca and the *Mixteca baja* or low Mixteca. In 1876 Garcia y Cubas set the number of Mixtecs at 220,000; the present population must be considerably greater. The Mixtec language is the type of the Mixteca-Zapoteca Family of Orozco y Berra. It is a polysyllabic-polysynthetic language employing twenty-six elementary sounds in its words, which may reach sixteen or seventeen syllables in length. There is considerable use of nasals; two or even three consonantal sounds may come together and doubling of vowel sounds is frequent. Variation in length of sounds and intonation vary the meanings of words; words frequently begin with consonants and end with vowels. The language presents many dialects—Orozco listing eleven, of which that of Teposcolula is claimed to be the most important. Not only are different towns said to have distinct dialects, but even parts of the same town. The grammar presents some interesting points and has been well studied. The Mixtecs were independent of the Aztecs with whom they waged war before the Spanish Conquest. Tilantongo was an important central town. The Mixteca-Zapoteca had an interesting ancient culture. The two tribes, Mixtecs and Zapotecs, have mixed profoundly in the neighborhood of Oaxaca.

The land in the District of Nochixtlan, though high, is fertile and productive. Wheat and oats are the main crops. Much maguëy is raised though it is rarely planted out in great fields, but only as division lines between land patches. The roofs of houses about Nochixtlan are often thatched with the *pencas* of maguëy. A striking feature on the slopes about the town are the watch-houses, small shelters built of maguëy *pencas* (leaves): they are of three forms—dome-shaped, conical, and ridged, and are barely large enough for one person to crawl under. They are lookouts from which watchers guard newly

planted fields. In the plain immediately about Nochixtlan they give place to rectangular A-tent-like structures of *sacate*, grass, perched upon four supporting poles, which raise them ten feet or more into the air.

Tilantongo is about six hours, by horse, from Nochixtlan. In 1899 its population was 2,266. It is Mixtec, but the population has been greatly influenced by Spanish contact and mixed with Spanish blood. (*Inds. So. Mex.*, Pl. LV.) All speak Spanish as well as their native tongue. None of the men and few of the women retain native dress. The houses are well constructed (*Inds. So. Mex.*, Pl. LVI.—LIX). The walls are built of adobe bricks of a rich brown-red color: the courses of mud between them are rather thick, and into them — giving a distinctly ornamental effect — are stuck sharp bits of stone so that each brick is marked out by its surrounding line of pebbles. (*Inds. So. Mex.*, Pl. LVIIIa.) This is probably not decorative in intent. The roof thatching is of palm, heavy and substantial. The favorite finish leaves the stalks of the upper lines of thatching palms projecting a little and those of the two sides alternate so that a curious double comb or serrated edge is left along the ridge. Frequently the front slope of the roof is carried several feet beyond the front wall and is supported by four posts (*Inds. So. Mex.*, Pl. LVI) thus forming a sheltered porch before the house. There are no windows and the door is in the middle of the long, front, side. The ridge-pole runs lengthwise of the building and the two great slopes are from it; the roof, however, is four-pitched, smaller slopes cutting down from the ends of the ridge-pole. The three house idea is fairly observed here although there may be more than three houses, even six or seven being grouped upon a little space artificially leveled or cut out for their reception. The cooking house is often made of slabs set upright instead of adobe bricks and the granary is usually of logs set horizontally and built up in crib-work. Both are thatched with *sacate* or palm but less care is observed than in the other house. The roof framework upon which these thatchings are supported is carefully made of poles lashed together with strips of bark or other cord.

In so far as the Tilantongo women wear native dresses they have black *enaguas*, which are so long as to require folding into vertical pleats. These pleats are worn in front. This *enagua* is belted with a plain red girdle of considerable length usually bought in Oaxaca; the *camisa* is usually plain but may have some decoration at the neck-

slit in red, rose, or green wool. A white cloth is often worn over the head, as a sort of *reboso*. Women go barefoot but wear a considerable amount of necklaces—of coral or glass metallic colored beads—and earrings. In a warm valley, over the mountains from Tilantongo and on the way to Tlaxiaco, at San Bartolo, women are characteristically dressed. All wear the black *enagua* pleated in front, special belts, other things as above mentioned, and elaborately decorated *huipilis*. The *huipil* is a characteristic garment worn by most of the women of the Indian tribes of Mexico. It is like a wide sack, turned upside down and slit along the bottom for the passage of the head and along the sides for the arms. It is long enough to fall to the knees but is usually caught up and girded at the waist. (*Inds. So. Mex.*, Pl. LXIV.) The neck slit is often edged with ribbon and there is embroidery decoration in bright colors but rather simple band patterns. (Figure 28.) The men of San Bartolo wear native belts; these may be eight inches wide and very long; they are closely and finely woven in narrow stripes of color and at the end are worked with considerable care into triangles of open mesh to which are tied tufts of bright wools; the favorite color combinations in these striped belts are red and white, red and black, red, blue and white. The belts worn by the women are not usually woven here but come from San Mateo Penasco or from Oaxaca. Those from the latter place are simple red belts like those seen at Tilantongo: those from San Mateo bear woven designs of some other color. The belts as worn give much the effect of those of the Tarascans, appearing as thick and solid encircling bands. This effect is not due, however, to the wearing of one over the other as there, but to wearing a thick belt of plaited palm to the end of which is attached a sufficient length of woven belt to go a little more than once about the body: thus the palm is concealed. (Fig. 30.) San Bartolo is strikingly beautiful and unlike Tilantongo. The houses are built of poles set side by side upright. They are arranged along two or three parallel streets and are embowered in dense masses of fruit trees—*naranja*, *lima*, *ahuacate*, *granada de china*; and *chirimoya*. Gardening is much practiced and spinach, lettuce and onions raised. The population is purely Mixtec and many do not speak much Spanish. Cotton is used in weaving, which is brought raw from the Coast country. The black *enaguas* used here and at Tilantongo are mostly brought from Magdalena de los Comalis, where their manufacture is important. They sell from 6 pesos upward. At Cuquila, a Mixtec town in the

District of Tlaxiaco, the men wear rather thick and heavy woollen shirts (Fig. 32), which are home-spun and home-woven: the material is undyed. They also wear belts of the same material. At San Bartolo they make rain-coats in form similar to those of palm so commonly used among the *mestizos*, but made of cocoanut fibre.

At Yodocono, San Bartolo and other towns, they keep many bees. The bee hives are cylindrical foundations made of sticks tied together, which are then wrapped in matting and hung to the sides of the houses or arranged upon supports over which protecting thatches are constructed (*Inds. So. Mex.*, Pl. LVIIIa.b.) The braiding of palm is much practiced. Handsome mats are woven (*Inds. So. Mex.*, Pl. LXb). The *tenates* of this district are famous. They are braided from palm strips; some of these are stained black by smoke. They are woven into artistic patterns. These *tenates* are carried by everyone; a carry strap of palm is attached to them and carried over the forehead, while the *tenate* rests against the back. (*Inds. So. Mex.*, Pl. LIXa, LXIa.) In Mixtec these carry-sacks are called *do-so*, the straps *yu-tu* and the combined article *do-so-yu-tu*. At San Bartolo palm is braided into hats and mats and the town officials when in the town-house are usually braiding. At Yodocono there is an old woman who weaves handsome and durable silk belts; they are woven in two solid colors — crimson and saffron yellow. We have already mentioned the cotton weaving at San Bartolo and the wool weaving at Magdalena de los Comalis. The former is done by the women: men are the weavers of the famous black *enaguas*. Magdalena de los Comalis is named from its trade in *comalis* or earthen griddles, of good grade: some dozen or fifteen men are engaged in this manufacture. As many more men at the same place make a polished red pottery, not glazed, which is usually in the form of censers, candlesticks and trays: at this town also they braid palm hats, but make no *tenates* or *petates*. At Cuquila they make a rather coarse grained but clean brown unpolished ware into large bowls with flaring slanted walls and finely shaped *ollas* or water jars more smoothly finished and of darker color. Men are the potters and they work by hand. A log, smooth, and flat on opposite sides, forms a table at which the work is done; a small square board serves to support the work and can be turned around as the shaping proceeds: the lump of clay and little gourd scrapers lie on the log table; the man sits while working upon a block of wood. When the scraper is used in smoothing or shaping the free hand is

held to support the part of the side opposite the point of working. When the vessel is shaped up, the edge is trimmed neat and square with a curiously skillful movement of the thumb nail, starting and carrying it right around with no hint of uncertainty to the very same point. The vessels are allowed to dry from ten to fifteen days after being shaped before they are burned. There are no permanent, special ovens for baking pottery. These great potteries of Cuquila are much exported and one constantly meets parties carrying them on the highway between Cuquila and the Pacific coast. (*Inds. So. Mex.*, Pl. LXIII.)

Cuquila is high in the mountains and the nights are much colder than at Tilantongo. The houses are log huts, but they are rarely close-built. The *temascales* are rather characteristic; they are rectangular, low, and flat topped; the sides are of stone and mud and the top is of logs daubed with mud. The entrance is small and rectangular; the person intending to take the bath can enter more easily by backing in, lying flat, than any other way. The little firing oven is at the rear and is irregularly half dome-shaped.

At Tilantongo, where we witnessed a funeral procession, they rarely use coffins: while burials commonly take place in the *campo santo* or consecrated ground the priest is but exceptionally informed of the death or asked to officiate. The grave is large, deep, and rectangular. Two men go down into the grave to receive the body which is lowered to them with lassos. A cross of lime is marked out on the bottom where the body is to lie. A piece of matting is placed over the face and dirt is then shoveled into the grave. A vessel of water and money is placed with the dead for his use; sometimes other objects are buried with him. On the first high ridge on the road from Tlaxiaco to Chichahuastla there is a considerable cairn, built of small stones and with a cross surmounting it. (*Inds. So. Mex.*, Pl. LXII.) Such cairns are not rare in the Mixteca and each Indian passer usually adds his contribution. They believe that foot weariness may be removed by rubbing the foot with one of these pebbles.

TRIQUIS.

Orozco y Berra, our best authority generally in regard to Mexican ethnology, was completely in error in regard to the location of the Triquis. He says: "Unclassified language. In the report of the

Curacies the four populations which speak Triqui are confounded with the Chontals, which is inexact. The pueblos correspond to the Department of Tehuantepec and are: Huamelula, Astata, Tequixistlan, Tenango." In accordance with this idea two small color patches on his map, near the sea coast, mark the location of the Chontals and Triquis, not far from Tehuantepec. The whole matter is error. The towns he mentions are none of them Triqui. Three are Chontal and the fourth (Tenango) is perhaps Zapotec. Tenango should be included in the patch of Zapotecan coloration and the other two patches should be uniformly colored for Chontal. The real district of the Triquis is situated in the high mountains of the District of Tlaxiaco and Juxtlahuaca, perhaps 200 miles in a direct line from Orozco's location. Recently Belmar has printed a little work on the Triqui language. [Ensayo sobre la lengua Trike. Oaxaca. 1897. 16mo. pp. 53.] It is probably the only treatise upon that language in print. He mentions six towns as Triqui towns, but erroneously: there are but five. They are San Andres Chicahuastla, Santo Domingo Chicahuastla, San José Chicahuastla, San Martin Ytunyoso, and Copala. All but the last are in the District of Tlaxiaco; Copala is in the District of Juxtlahuaca. San Miguel Chicahuastla, mentioned by Belmar, is really Mixtec in language. These five towns probably have a population of less than two thousand souls and they form a little island of Triqui speech in the midst of a Mixtec area. I am assured that Copala has a dialect different from the others, though comprehensible to them. The people of Copala are also distinguished by dress and are said to be neater and more conservative than the other Triquis. Belmar gives in his *Ensayo* a brief sketch of the grammar, a list of phrases in Spanish and Triqui and a Spanish-Triqui vocabulary. The language requires an alphabet of twenty letters. Abundant use of prefixes is made for producing grammatical variations—as number, diminution or augmentation, sex, gender, case, etc., etc. Belmar considers the language related to the Mixtec and therefore a member of the Mixteca-Zapoteca family.*

San Andres Chicahuastla is the Triqui town where our own work was done. It is beautifully located on the very crest of the Sierra Madre and on a bright clear day the Pacific, perhaps seventy-five miles

* It does not seem to us that enough is gained by the operation to make it worth while to apply the Powellian ideas to Mexican linguistic nomenclature as Mason has suggested.—*Am. Anth.* 1900. pp. 63-65.

away, can be seen. The town suffers in day time from heavy cold mists that sweep up from the coast and at night is exceedingly cold. Perhaps as the result of their unfortunate climatic conditions, the people are given to drink, by which they have been fearfully degraded. The town is most picturesque. Many of the houses are circular, others rectangular. The walls are composed in either case of poles set upright at suitable intervals, across and upon which are horizontally lashed poles a few inches apart. These are then daubed over with clay. The rectangular houses are thatched with far-projecting, low-sloped thatch of *zacate* (or more rarely palm). A special capping of *zacate* thatch straddles the ridge line and is held down by poles lashed in position; the outside of the walls are often repaired or strengthened by *zacate* laid on vertically and held in place by horizontal poles lashed in position. The round houses are handsome structures often about twenty feet in diameter. The walls are built as above described but the roof-thatching is done in part with palm: these circular roofs slope quite abruptly and are much higher than those of the rectangular buildings. The palm thatching is laid on in several layers from below, one overlapping the other and the edges being trimmed so as to present several well defined concentric circular lines. These bands may vary in material—palm or *zacate*. Where the thatch comes to a point above it is securely tied, two cross-sticks thrust through the mass and projecting at their ends furnishing good support for the lashing cords. This point of thatch is frequently capped by an *olla* or water jar turned upside down: the object is to better shed the water and prevent its destructive action upon the ends of the thatching material. Storehouses and pens are found with every house and are usually circular; they are made of poles planted side by side and lashed together by strips of bark or withes which are used in alternating pairs going under and over alternate poles. The roof of such a circular storehouse is circular and may be, though rarely, capped with the upturned *olla*. Many granaries are rectangular, composed of logs built up as a crib-work, but the roof is generally circular. These various houses and outbuildings are arranged in groups of from four to ten upon artificially plane surfaces prepared for them by cutting away a slope. (*Inds. So. Mex.*, Pl. LXIX-LXXII.)

The men are dressed in unbleached cotton, much of it of coarse texture and made in the village. The *cotone* or shirt is short, square cut at the waist; the neck opening is cut to a rectangular form. There

are sleeves but the sides are not sewed together. An idea of the garment will be secured as follows: take a rectangular blanket of small size: fold it midway and sew the corners together along the sides for a little way up from the lower edge: cut out a central rectangular hole from the line of folding and hang a pair of sleeves at the corners. (Fig. 32.) The trousers are of the same material. The feet are usually bare but sandals are somewhat worn. The trousers are usually rolled up to expose the larger part of the legs. The *cenidor* or belt for men is made by the women and is of white cotton with red, or blue, or red and blue narrow transverse stripes usually in threes; the ends are decorated with red or blue cotton bands which are embroidered in rainbow hued wools in running patterns. The *sombreros* most worn are of black wool rather high crowned and are bought in Tlaxiaco, for one peso fifty centavos; they are so rarely worn by others than Triquis as to be almost characteristic. Men, women, and children, through a great part of the dismal and damp days, shiver in dull grey and whitish serapes, cross-striped near the ends with dull grey: these are made at Yolomeca. The dress of the women is characteristic and of local manufacture, except the belts which are bought in Tlaxiaco for from one to three reales. The *huipilis* are of white cotton, woven close or in openwork. They are long and of good material, but bear comparatively little decoration: narrow bands running horizontally are outlined by colored threads woven into the texture and then decorated with diamonds, zig-zag lines, rosettes, etc., in colored wools; a pair of vertical lines (one on each side of the neck-slit) are needle-worked with colored wools; just below the neck-slit in front (and sometimes behind) is a transverse band several inches long and about two inches wide which is worked solidly with different colored wools in rather attractive patterns (Fig. 33). The *enagua* is eminently simple. It is a strip of striped cotton, heavy and closely woven; this is scanty wide enough to reach from the waist to the knees and scanty long enough to wrap about the body with a little overlap. There is no spare material to be thrown into vertical pleats as in the dress of Tarascan, Mixtec, or even Aztec women! (Fig. 34.) The favorite colors of these striped dresses are blue, white, brown and black and they present little variety. (*Inds. So. Mex.*, Pl. LXXIV and LXXV.) Combs for the hair are much like those used in the lower hot lands of the Pacific coast generally. They are made of a number of thin strips of bamboo or other flexible material placed side by side, bent around,

and held in place by inwoven wrapped bands of fibre: this may be so handled as to give pretty decorative effects. Women usually wear nothing on the head or feet.

Women spin constantly. The spindles are rather long and slender doubly pointed sticks that are thrust through slender somewhat top-shaped spindles of clay. (Fig. 38.) Sacks or bags for maize, beans, etc., are made of a striped cotton of home manufacture. This is of dirty white and buff or yellowish color: a strip is taken, of suitable size, folded once transversely and then the edges are sewed together and embroidered with zig-zag lines of color. (Fig. 35. The position in the engraving is wrong. Hold it so that the number is at the left hand of the illustration.) For carrying *tortillas* neat cloths are made: they are always made of two narrow strips of cotton, which have a stripe of red or blue along one edge. They are placed side by side, with the color edges together and seem to form one piece. The line of junction is embroidered with a running zig-zag of colored wool. Horizontal bands, marked out in the texture by inwoven blue or red threads have triangles, pyramids, diamonds, zig-zag lines, etc., worked in them with colored wools. Sometimes the designs thus worked in are highly formal and conventionalized human figures. (Fig. 36.)

Tenates are simple and strongly made of palm. In the mean little plaza or market place of Chichahuastla comparatively little money passes: much bartering takes place. Traders bring loads of sugar and of fruits (especially pineapples) from the lowlands, and men from Cuquila stop with their great loads of *ollas* and bowls on their way to the coast. The women of the village offer *tortillas* or eggs in trade: if their unattractive wares are not wanted they turn sorrowfully homeward.

ZAPOTECES.

The Zapotecs held an extensive area to the east and west of the old Mixtec territory. They were a powerful tribe and were frequently at war not only with the Mixtecs but also with the Aztecs. At the time of the Conquest they had been suffering more or less degradation at the hands of these powerful foes. Their territory extended from Oaxaca to Tehuantepec and Xoconochco. Garcia y Cubas gave the total Zapotec population in 1876 at 239,600. It must now be considerably greater. Juan de Cordoba who wrote a Zapotec *arte* in 1578 says: "it is now to be noted, that among all the pueblos that speak

this language, even those purely Zapotec, there is no pueblo which does not differ from others somewhat — little or much — one placing certain letters for others and another in this that though speaking the same words they are used in different senses." Orozco y Berra gives his list of Zapotec towns in the State of Oaxaca, under six headings on account of well defined dialectic differences. Not only is the Zapotec of Tehuantepec different from that spoken near Oaxaca; but San Blas which adjoins Tehuantepec and the town house of which is not ten minutes walk from that of Tehuantepec speaks a different dialect from the latter. (See Bul. IV, Dept. of Anth. Univ. of Chicago.)

San Blas and Tehuantepec are mutually distrustful. Not only are these adjoining municipalities dialectally different: they are different in political spirit — thus they were on opposite sides in the Maximilian affair. San Blas is now enjoying considerable prosperity and is buying land constantly. To-day their property extends almost to Huilotepec some four leagues away.

Many of the Zapotecan villages are large. Typical is a town, now quite familiar to the tourist, Tlacolula, not far from Mitla. Though in general like the modern town of Mitla it is far more thrifty and well built. It occupies a level space of fertile soil; the town is laid out with straight intersecting streets: the houses are set in large yards, which are separated from each other by carefully planted *organo* hedges. Some of the yards are veritable gardens and a common crop is *nopal*, i. e. the prickly pear cactus, the broad, flat, round, leaf-branches of which are used for feeding animals and as a salad for human beings. There are many fine oxen kept here and at almost every house is an ox-cart. These are heavy affairs, usually with two thick, solid, clumsy wheels, and often with a protecting top of matting. The ox-cart is to be found, abundant and picturesque, in every part of the Zapotec district except the most mountainous. The houses are rectangular, single-roomed, but of large size. At the corners are set tree-trunk posts: others are set at suitable intervals between these. The walls are made of cornstalks or canes set close together upright and lashed together and to horizontal strips of the same material by bark strips or leathern thongs. There are but three or four or these horizontal lines and they are placed on the outside of the walls. The doorway is in the middle of one long side and the roof is four-pitched — two small pitches at the ends and two larger ones over the two long sides, meeting along the ridge pole. The roofs are high and rather

abruptly sloped. The framework upon which the *zacate* thatch is supported is made of poles lashed together. The central pole of the end slope supports projects upward; about it a horn of thatching is carried up and protected by an upturned *olla*. These projecting olla-capped horns are picturesque features (*Inds. So. Mex.*, Pl. LXXXII). At Mitla the houses are much the same but less carefully built. In towns like Santiago Guevea (*Inds. So. Mex.*, Pl. CI) the pitch of roof is a little steeper, and there are no olla-capped horns. In Huilotepec and other places near Tehuantepec the enclosed yards are surrounded by high close fences of canes and a large part of the yard may be roofed over with an awning of canes: these structural features are protective against heat and blowing sand. Throughout the Tehuantepec district thatched roofs supported on corner posts but without side walls are frequently constructed near houses and are used as airy places for work or lounging during the day — and sometimes as shelters over the hammocks at night.

Dress among the Zapotecs varies with locality. At Mitla and Tlacolula the women wear a white cotton *enagua* folded about the lower body and held in place by a belt or sash; the *camisas* are made of cotton bought from the *tiendas* and are of the usual form—little short shirts, with hardly any sleeves. Much time and labor are bestowed upon their decoration with needle or by drawn work. These patterns are not made in colors and sometimes upon a single little sleeve, hardly more than covering the shoulder, there will be eight or nine bands of drawn and needle work, each different from the others. The dress described is that worn at home or work; on gala days or when going to town the plain cotton *enagua* is covered by a heavy woolen one a yard or more wide and three yards long, enough to go around the body twice with a few coarse pleatings. There are two kinds of these *enaguas* or *mantas*, one of plain black, the other a crimson red, plain or with black stripes. At Mitla these *mantas* are woven, under the trees, with the old and simple device so often represented in the ancient Mexican manuscripts. The warp threads are fastened at one end to a tree or post, at the other to the belt of the weaver or to a strap passing behind the body. The weaver may stand or sit while working, but the threads are held taut by his own weight. A few sticks and loops of string serve to hold the threads apart, to pass the woof threads through the warp, to separate and reverse the sheds, and to beat home the passed woof thread. This style of weaving is found at many places

in Indian Mexico and will be repeatedly referred to. At Mitla this is the prevalent method; at Tlacolula the *mantas* are made chiefly on old-fashioned Spanish looms. Usually the man who weaves black *mantas* does not make red ones and *vice versa*. Prices vary with size: from 6 to 20 pesos. The dyes are home made. For the black *mantas* they use the leaves of a tree or shrub which they call *hojas de tinta negra*—black dye leaves, which grows locally; the other leaves called *hojas de tinta*, dye leaves, they purchase. The *mantas* are usually woven in rather narrow strips and two are joined side by side, the junction being decoratively stitched with colored wool. Women and girls wear the ordinary Mexican *reboso* but have a characteristic way of folding it and laying it on the head with the ends hanging down. (*Inds. So. Mex.*, Pl. LXXXV.) The hair of the women here is in-braided with colored cords, green, black, and a purplish red being favorite colors although there are also narrow purple or blue ribbons with flower patterns worked in them. These are not made here but are brought from Ocotlan, Oaxaca (the simple cords) and from Tuxtla Gutierrez in the State of Chiapas (the flowered ribbons). Shoemaking—if we may use the term—is a special trade in the Mitla region; the shoemaker dresses his own skins, which are chiefly those of deer; he also colors them with a bark which is brought from the mountains. Men's "shoes" consist of a simple sandal sole, with a string passing between the great toe and its neighbor; this sole is thickened and heeled behind and has a flap of leather so sewed to it as to protect the wearer's heel and fold over the upper surface of the foot, in front of the leg; it is there fastened with a little thong to which the upper end of the toe string is tied. (Fig. 39.) The woman's foot gear is still stranger: to the sandal sole, heeled or not, is attached an upper piece of leather which protects the heel and ankle. To its sides above and in front is attached another piece of leather which covers the upper surface of the foot except the toes. This has eyelets for lacing like our own shoes. (Fig. 40.) It is, however, quite fair to state that these women usually go barefoot, while the men generally are sandalled.—The dress of Tehuantepec women is famous, striking, and becoming. These women have fine forms and features and have often been called by travelers the handsomest women in the world. Two *enaguas* are favorites, made of heavy cotton closely woven. One is a rich and beautiful red; the other is a purple—more or less a violet (see The Chontals). Over the upper body is worn a *huipilili* (little *huipili*)

which is of light cotton print stuff bought in the market: some shade of brown, purple, or red is favorite and the most prized are apt to have large white dots or spots. These are scant; they have no true sleeves, are low-necked and usually too short to reach the girt *enagua*, so that a strip of brown skin appears between the two garments. The *huipil* is a marvel. It may be of muslin or of a kind of lace. It is made with full length sleeves: it should be worn as a jacket or shirt over the *huipilili*. It may be white, delicate blue or, if of lace, brilliant green, red, or even yellow. To the neck, the borders of the sleeves, and the lower border of the garment wide ruffles of pleated lace, heavily starched, are attached. (Fig. 48.) It is rare that the garment is worn as a *huipil*; usually it is turned upside down, the wide lower border is thrown so as to surmount the face with a wide divergent fringe while the body, sleeves, collar, and wrist ruffles dangle down the back. The effect is striking and many travelers who have seen it have described it as a head-dress. When the lady goes to church she draws the *huipil* over the head, as if intending to put it on, as its original plan required. When the collar just surrounds the face, framing this in an oval frame, she stops—she knows the effect is good. It is but rarely that the garment is really worn. These women of the Tehuantepec region are fond of decoration and in the fine old days of Tehuantepec's prosperity they were gorgeous to behold. They delighted in wearing gold coins. Small ones were made up for earrings; others of all sizes were strung into necklaces and it was formerly not uncommon to see a woman with several hundred dollars worn in this way. Now, however, such sights are rare. In the hard times through which they have been passing the prized coins have been sacrificed one by one. At San Bartolo, on the high road from Tehuantepec to Oaxaca, the Zapotec inhabitants are conservative and here both men and women wear characteristic dress. It is said that until quite lately the usual dress of the women was too scanty to meet the approval of the Jefe who with some difficulty has brought about the habit of wearing the *huipil* on ordinary occasions. This, however, is really at times a marvel. Figure 42 inadequately represents one made of fine cotton, carefully woven in the ancient fashion: it is long enough to reach to below the knees and is magnificently embroidered—especially in its upper fifth with lines of elaborate but small designs in silk—double-headed eagles, birds, dogs, men on horseback, etc. This garment represents many months of work and the silk with which it is embroidered,

brought from the mountains and dyed with cochineal, cost a half-peso an ounce. These women often turn the *huipil* upside down and throw it over the head so that the main part hangs down behind—*a la Tehuantepecana*. The lack of the wide ruffs of lace, however, prevents this from any artistic quality and the effect is baggy and ugly. The men wear short *camisas* of white cotton and loose trousers of the same material. These are home woven and many of them bear patterns representing lines of figures: these are usually in pale reddish or purplish colors, or in white. The latter are almost labor thrown away, as they are visible only on careful examination. (Figs. 43 and 44.) The men here wear low-crowned, wide-brimmed, black hats. Their belts are of red cotton: the yarn is purchased and the weaving done here. Near the ends they are worked with silk patterns—unfortunately not appearing in Fig. 45. Men of San Bartolo frequently wear over-trousers of skin slit at the sides. (*Inds. So. Mex.*, Pl. CIV.) They carry red cotton cloths with black line checking for *pañuelos* (handkerchief, neckcloth, carry-cloth). The women have white cotton *tortilla* cloths—napkins with embroidered patterns.

The Zapotecs of to-day are really, like their ancestors of the past, among the most pleasing Indians of Mexico. They are intelligent, industrious, acquisitive, and progressive. In many of their towns the municipal building is creditable. The tribe has produced men eminent as political leaders, soldiers, and scholars. The great President, Juarez, was a full-blood Zapotec. The Indian Secretary of San Blas (district of Tehuantepec) has written and published a grammar of his native dialect (see Bul. IV, Dept. Anth. Univ. of Chicago), which is creditable. On the whole it must be admitted that in the Tehuantepec region the women appear to have more energy and quicker intelligence than their husbands. They appear to decide most matters of importance and are the usual "spokesmen" of the family. In this region night journeying is common on account of the daytime heat. The traveler meets a constant line of ox-carts, each usually carrying a whole family. Should he ask his way or inquire for any information it is generally the woman and not the man who responds. The great market at Tehuantepec is one of the busiest and most attractive in the Republic, but all the sellers under the roof are women. It is claimed that no man would venture to sell there, or — if he did — that the women would drive him away.

We have already mentioned some of the arts and industries of the

Zapotecs. Fine deep baskets called by the Aztec name *chicahuite* are made at Tlacolula and elsewhere. (*Inds. So. Mex.*, Pl. LXXXVI.) The material, which is cane, is cut into long strips, which are laid out in the sun to dry before being worked up. These baskets when in use may be carried on human backs, or in pairs may be hung upon *burros*, one on each side. In the markets at Oaxaca several native wares in pottery are sold; the most interesting are an unglazed black ware, and a brilliantly green-glazed ware. The former is made at Coyotepec. Large *ollas*, pitchers, cups, bowls, strainers and bottles are made in it (Figs. 21, 22); also many types of toy whistles and bells with a clear and pretty note. (Figs. 20, 23, are bells; 24, 26, are whistles.) Such forms as 24 in their general art idea, tripod support and position of mouthpiece are strictly comparable with many ancient whistles from the old Zapotecan graves and village sites. (Fig. 25, on much smaller scale than the others.) This black ware is sold at remarkable cheap prices. The green-glazed vessels are of a clean yellowish ware, much like that of our flower pots; their cost depends upon the extent of surface glazed and the richness of color of this glaze. Cups of all sizes and forms, bowls, teapots, tripod censers (Fig. 27), are common forms of utility. Wee vases, cups, pitchers, etc., are made in graceful forms and with wonderfully deep and rich glazing; the variety of these little toys is astonishingly great. Small whistles in forms of birds and animals are made in this ware but usually with but thin and light colored glaze. I am informed that this ware is wonderfully refractory and that cups made of it serve excellently for crucibles. The green glazed ware is made at Azompan. Speaking of whistles, simple cane whistles, *pitas*, are much used in Zapotecan celebrations, and *chirimiyas* (Fig. 41, from Mitla) occur.

The following legend is told at Tehuantepec. The name means "the hill of the man eaters"—i. e. lions or pumas. Long ago the Zapotec tribe living here was in great distress on account of the many lions which lived on a hill near by and killed and ate many persons. In danger of extermination they sent to consult the Juaves, famous for their *naguales* (sorcerers). The oldest and most skillful *nagual* performed certain incantations and then announced that a preserver would come forth from the sea. Soon there crawled out upon the shore a gigantic and terrible turtle. Slowly the monster made his way inland until he reached the foot of the hill of the lions, where the mere sight of him turned these into stone. The Juaves were aghast

at the fearful power of the being which their magic had evoked and at once performed new incantations by which the turtle also was petrified. And to this day a double row of stony lions may be seen on the hill slope, and the turtle rock at its base — all bearing witness to the verity of the tale. There are many beliefs regarding *naguales*, pagan practices, birth customs, etc., among the Zapotecs regarding which my notes give little that is new. One practice I have on the best authority relative to marriage. At Tehuantepec and Juchitan on the morning after a marriage, the bloody sheet from the marriage bed is wrapped up, wound about with a colored napkin and placed in a small basket, which is carried through the streets on her head by an old woman, who is followed by music and a company of friends. She goes first to the house of the girl's mother, then to that of the girl's god-mother where the evidence of the bride's virginity is triumphantly shown. Later she carries it to the houses of friends. The custom is now passing away in Tehuantepec but still is fully observed in Juchitan. The evil eye is believed in at Tehuantepec. On one occasion I visited a gentleman who has a native housekeeper and who has many of the parrots and other birds of the country for pets. I expressed much admiration of these and presently in distress the housekeeper called my host aside and warned him that my admiration and attention would work the creatures harm — that they would all die. The belief that deformities like harelip and defective members are due to the eclipsed moon hold good here and mothers about to give birth to children should bind a key or any piece of iron next their body, under the belt, to protect against this misfortune. — Cairns or pebble piles are somewhat heaped up along mountain roads in the Zapotec area and often earthen censers or little circles of stone which serve as substitute for them may be seen upon wayside rocks where copal has been burned — usually before a cross. The former cura at Mitla Francisco Reyes told me that a cross near Mazatlan is much revered. On the ground near it are outlines made with pebbles; these represent houses, corrals, etc. They are in the nature of *ex-votos*, or sympathetic magic, and are constructed by those desiring good fortune in building a new house or with their animals.

THE MIXES.

It is improbable that the Mixes have notably gained upon the population of 26,000 allowed them by Garcia y Cubas in 1876. Their

villages are in the Districts of Yautepec, Villa Alta and Tehuantepec. The people are conservative in the extreme and only wish to be left quite alone. They were never reduced by the Aztecs or Zapotecs and barely by the Spaniards. They live in a magnificent mountain region and their towns are on the heights. With few exceptions it may be said that they are in one of three lofty positions — (a) on the very crest of ridges, (b) just below the crest, on the slope, where they will be sheltered from the wind or (c) on the crests of high spurs jutting out from main ridges. Probably many of their town sites are ancient: before the Conquest many Mexican tribes built their villages upon the heights but under Spanish influence removed to the plain or valley. The Mixes have not yielded to this influence. The roads of the Mixes are notable in going as directly up and down the mountains as it is possible to carry them; roads in the country of Zapotecs and most other tribes wind and curve and make great zig-zags. While these roads are not cart roads they are fairly cared for and in many cases logs are carefully set crosswise of them to prevent wash. At stream crossings there are not infrequently *hamacas* or *liana* (vine) bridges for foot passengers. These are swung across from tree to tree: two long vines bound together form the foot path; parallel to it are three or four stout *lianas* on either side; these are lashed into position by other *lianas* and form sides, the top ones being hand rails: from these hand rails long *lianas* slant upward to branches of trees where they are made fast thus anchoring the bridge and preventing its swinging. (*Inds. So. Mex.*, Pl. XCVI.) The Mixes have a generally bad reputation with outsiders. They are frequently characterized as filthy, stupid, and vicious. They really are suspicious of and timid toward strangers, and unusually superstitious. Few Mixes speak Spanish well and in some towns the women and older men practically do not use that language. Their own language is harsh and guttural. It requires eighteen letters for its writing. Combinations of two or three consonants and doubled vowels are frequent. Verbal nouns are extremely numerous. Orozco y Berra does not attempt to classify the Mixe, but Charency and others have shown its relation to Zoque and the two form a Zoque-Mixe family. The Mixe language is fairly uniform: Ayutla, Juquila, Ocotepc, Quesaltepec, Camotlan, Ixcuintepc, Coatlan — the towns which we have visited appear to speak much the same. Our carriers from Juquila had no difficulty in making themselves understood in all. Totontepec is asserted to have a notably peculiar dialect.

The house architecture of the Mixes varies, from town to town, with the topography. They are everywhere rectangular, quite large and neatly though heavily thatched with a *sacate* thatching that projects well around the whole house and is trimmed square at the edges. It is capped by a heavy crest or comb overlapping the ridge. Farm houses near Ayutla are well built log-houses: at Ayutla they are neat purplish red adobes, with single-sloped tile roofs; at Quesaltepec and Ixcuintepéc the walls vary but are usually of adobe and poles: some consist of sections of adobe clay built one after another: others are double, of poles, between the two sets of which adobe is packed in; some are of poles and sticks the interstices between which are filled with ferns and leafy boughs, and twigs; others consist of poles and sticks set upright and lashed together; a few have the lower half of clay while the upper part is of upright sticks bound together. (*Inds. So. Mex.*, Pl. XCII, XCIV.) Neat granaries are seen in most Mixe towns: they are commonly built of logs arranged in crib-work, set well off the ground on four posts and thatched. At all the towns considerable attention is paid to agriculture. At Ayutla maize and peas are important; *ahuacates* are much raised; at Juquila there is little maize. At Quesaltepec and Ixcuintepéc coffee is raised. Bananas, zapotes and oranges are cultivated at several towns. There are few arts. Women do some weaving of cotton; at Tamasalapa they make a common black pottery into *ollas*, bowls, etc.: a common and rather characteristic form is a stomach-shaped water vessel of perhaps a quart or more capacity. Mixes are famous carriers and it is asserted, I believe correctly, that they never go without a burden. If when they have carried charcoal, pottery, coffee or fruits to Oaxaca they find themselves without a burden of value they will load up with stones. If this is true the practice is not so stupid as it might at first glance appear.

Considering the religious and linguistic conservatism of the Mixes they are surprisingly non-conservative in dress. Not only men but women go largely clad in stuffs from outside made up after "civilized" fashions. Some of the women of Tamasalapa wear a dull blue *enagua* which is bought in Oaxaca: and in Camotlán they are said to wear a white green-striped *enagua* also made at Oaxaca. At Coatlán the women are rather strikingly clad: they wear a *huipilili* just like that of the Tehuantepecanas and a blue *enagua* which is said to be bought in Tehuantepec: the belt is also foreign; the *huipil* however is of local

manufacture. It is of white cotton. It is divided by vertical red stitching into three sections, the upper part of which—above and below the neck slit is embroidered with red ornamental bands. (Fig. 46.) The hair is heavily braided in with reddish brown cords and the thick braids are wound around the head in a wide ring or band. (*Inds. So. Mex.*, Pl. XCV, XCVIIa.) The whole effect of dress and hair-dressing is that of Yalalag, a Zapotec town far to the north in the district of Villa Alta. Why it recurs here I do not see.

There are many survivals of pagan custom among the Mixes; Colzocan, Margarita, Alotepec, Coatlan, all have bad reputations in this direction. Worst of all however are Tamasalapa and Mixistlan: it is said that "even when the Archbishop was at these towns no one presented himself for confirmation; they are a law to themselves and practically recognize little authority in Jefe or Archbishop." At Colzocan it is said there is a little Christian shrine, *behind* which is an idol to which offerings are made: these consist of *tortillas*, fruits and fowls. At Quesaltepec and Alotepec a turkey or hen is killed by cutting off its head and the freshly sowed fields are sprinkled with its blood to ensure fertility. In doing this the following formula is repeated—

I am about to kill thee and to
sprinkle thy blood in the field
that the crop may be here.

Brujas or witches are numerous: in fact some towns are reputed to consist of nothing else, as for example Alotepec. At such towns peddlers and traders have a hard time. If they are not satisfactory in their prices, the *bruja* meets them, transformed into a "lion" or a "tiger," after they leave the town and kills and devours them! The well known American naturalist, Mr. E. W. Nelson, tells me that on the summit of the sacred mountain Zempoaltepec there is a place of sacrifice—especially for turkeys. He saw the people going there on the proper day carrying their fowls. On one occasion he found the spot with a great pile of turkey feathers scattered about and many broken censers. At San Juan Guichocovi he says there is a great rock on which young hunters must place the skulls of the first game they kill: they must under no circumstances eat the meat of these animals.—It is not easy for the hurried traveler, busied with other matters, to get absolute information of sacred caves, still less to visit them. There are undoubtedly many such. We were told of one near Ocotepéc. Our *mozo* who was usually reliable told us of such

elsewhere. One on the crest of Coatzacoalpa is visited by Mixes from Chiomas, Candellon, San Perdito, Josocón and Mixistlan on September 1st: thither they bear as offerings turkeys, candles, *tortillas*, etc. Another sacred spot known as the Cerro del Gallo lies to one side of the road from San Miguel to Santiago Guevea. This is *not* in Mixe territory. To it, on January 1st, flock great numbers from Tapachula, Tonala, Pijiapa, Ixcuinta and Comitlan. As my informant puts it these towns "*pertinecen al Cerro de Gallo*" (belong to the Cerro de Gallo — in the same way as churches belong to a diocese). If this statement is exact it is at once astonishing and interesting: the towns mentioned are far distant and the fact of their population making pilgrimage to this spot would hint at former residence hereabout and distant migration. On the same day, January 1st, the people of Juchitan, Tehuantepec, Chivitan, San Geronimo, Los Tablones, Santa Maria, Juntepec go to a cave between the *Cerro de Relampago* and the *Cerro de Cuezcomatl* to one side of the road from Tehuantepec to Narro where they leave their gifts. Feliciano was there one January 3d and saw the ground covered with candle-tips, *tortillas*, etc. If the pilgrims may hear thunder at the time of their visit the occasion is particularly auspicious. These last two sacred spots are not Mixe.

Archbishop Gillow of Oaxaca, in his interesting book *Apuntes Históricos*, devotes one chapter — the tenth (pp. 203-212) to the "Idolatries and superstitions which yet exist in the pueblos of Caxonos and its vicinity." As this book is little known in this country we translate the greater part of this chapter. The description of the finding of an idol of wood in the church at Mixistlan we have already translated and published elsewhere. (The Open Court, July, 1899, pp. 387-391.) This idol is a cylindrical box of wood, with a lid fitting over it. It is 1 foot 6 inches high and 8 inches in diameter. The front bears a carved human figure, with eyes closed and mouth open; the left hand is open on the chest, while the right grasps some object — perhaps a knife: an apron hangs from the waist *or* some object like a drum is held between the feet: animal figures, perhaps lizard-like dogs are at the sides: heads of serpents with parts of bodies are carved near the top, just below the lid. The idol has been painted with red and bluish green. From the complaints made by the people and from some points in the carving it is quite likely that this idol was a god of water. (*Inds. So. Mex.*, Pl. XCVIIb.) Archbishop Gillow after giving the history of this idol goes on to say:

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"The Presbyter Juan M. Muñoz Cano, at present cura of the Sagrario of the Cathedral of Oaxaca, found himself at the town of San Pablo Xaganisa, belonging to the parish of Caxonos. They took him to a spring, which irrigates the pueblo: this spring is in a sort of cave from which the water pours forth abundantly. He had been assured, a little before, that this was a place of idolatry and, having arrived there, he ordered some of those who were with him that they should enter and see what was in the cave. All were young Indians; and on his telling them that they should bring out 'the saint' which was in there, they were overcome with surprise and were inclined to refuse to do his bidding: but urging them again, and calling the idol which he believed to be in the cave 'a saint,' two boys crept in and, in a little time, brought out an idol of stone, about a foot high—also a brasier of clay with charcoal upon it, and some feathers of a turkey. He then took the idol in his hands and after having made some explanations (so far as he could, being ignorant of their language) in order that they might have a horror of the idol and every sort of idolatry, he broke it to pieces before them.

* * * * *

"They also practice magic, sometimes killing each other by means of it; they make use of certain ceremonies such as the laying on of hands, and blowing—practicing the latter upon the enemy, walking around his house. They send him also, by a third party, something to eat, with the intention of harming him: they succeed in this, although not by putting poison in the thing sent. They are superstitious in the extreme, having much attention to the phases of the moon, and according as the weather is good or bad for them, they burn candles—in definite numbers, known only to them—which they distribute between certain roadside crosses, where they light and leave them. In cases of great necessity, they bathe at midnight and then light, in front of the church or before their idols, the candles bought in the plaza. The most superstitious light these at the lower, usually broader end.

"When they have a hatred or prejudice, or see that some person is prosperous and wish him to die, they hold reunions in which they make vigil, carrying an empty coffin from the place nearest the church to the cemetery, praying meantime, in a low voice, as for the dead.

"It is a general belief in the pueblos of Caxonos and even in the City of Oaxaca among the lower people—and in many other cities of the

Republic—that when they kill someone, if he falls mouth downward, the assassin cannot escape unless he drinks the blood of his victim, which they do. In various districts, but especially in Caxonos, they make triangular *tortillas* with a hole, about a finger's breadth in diameter, through the centre, which they give especially to babies: they make others of different shapes, among them some which are round and the size of a peso (dollar) or less: likewise others, called *memelas*, like belts a foot long and three or four finger-breadths wide. It is not certain that there are diviners in Caxonos, but the people there believe in them and go to Yalalag to consult them, paying them a price agreed upon beforehand.

“Southeast of Yalalag, at a distance of three-fourths of a league, is a cataract fifteen metres high, whither the people of the town resort for idolatrous practices. When rain fails they go there to bathe, with the belief that thus it will rain more promptly. They deposit at this place *tepache*—an intoxicating drink—*tamales*, fish, and other viands as offerings: in the same place they strangle fowls, sprinkling their blood to secure favorable response to their petitions. When they desire the death of some enemy, real or supposed, they strangle fowls, sprinkle the blood to the corners of the field, and then bury them either there or outside the house of the enemy. On the other hand, when they mean to favor someone, they practice the same ceremony but inside his house. All these things they do by counsel of the diviners whom they consult also to learn on what day or in what phase of the moon to perform them. There are at present in Yalalag three diviners, who are consulted by the natives of other towns as well and whose responses are sometimes verified.

* * * * *

“It is asserted, further, that in that same town, there is, in a place known only to the idolaters, a house full of idols. Many of the townsfolk have confidence in two of the moon's phases—full and new—considering the new moon powerful and the full moon favorable to their requests: this too, whether these are requests favorable to friends and loved ones, or harmful to enemies. This same superstition exists in the other pueblos mentioned above, preference being given to the new moon for having masses and responses said and for carrying candles and flowers to the churches and crosses, believing that to be a good time, favorable for securing abundant crops and ridding one's-self of disease. Always when they go to practice idolatry in the caves or mountain cliffs they sally from their houses at midnight.

"When anyone of that population dies they are accustomed to place with him a little *ficara* (gourd bowl) containing money and *tortillas*: if it be a woman they place also some *pixcles* or *mamey* seeds, in order that she may adorn herself and dress her hair before presenting herself to the divinity. The coins placed with the dead are to provide him with the necessities of the journey which he is believed to make and the *tortillas* are to secure passage from fierce dogs, which it is believed the dead encounter on the journey. In accordance with the advice of their diviners, they are also accustomed to bury some viands, *in order that the earth may eat also*.

"When there is some thorn in the body, or some swelling, they believe that some enemy has put earth, a pebble, or a bean into their flesh and they seek their *chupadores* (suckers) that they may extract the evil: these after sucking the spot affected show a bean, a pebble, or a bead, pretending that these things were therein. They are also strongly of belief that no one passes directly on dying to the beatific vision, but that all remain suffering in this world: the more devout betake themselves to the diviners, (who exploit them admirably, so long as they dare) until they ascertain, by their help, that the relatives have attained heaven.

"It is also stated that individuals of both sexes, belonging to the pueblo named, meet in three different places, to make sacrifice with fowls and dogs to idols, serving really as priests of idolatry.

"There are pueblos in which, when it thunders, the people gather together in the *patio* of the church, in order to cry out and they call the *Mayor*, that he bring the keys and lock up the thunderbolt in the jail; others are provided with machetes with which to strike the thunderbolt, which is as they say, *al contrario*, in chance it should desire to fall upon them. Recently, in the pueblos of Cotzocon and Candalloc there was a great fight on account of a lightning stroke. These two pueblos frequently threatened each other with lightning stroke, and a bolt having fallen on June 23 of the present year, St. John's Eve, in Cotzocon, three men were killed by it; consequently there was a serious fight with those of Candalloc.

"Among the Mixes they are accustomed to kill turkeys and sprinkle the blood around the planted fields that they may have good harvests; and when there is question of boundary line with a neighboring pueblo, they are accustomed to kill turkeys and to sprinkle the blood along the lines which they believe to be the boundaries. They buy pullets

at a medio or a real and carrying them to the mountains, they sacrifice them in that manner to their gods. They place eggs of hen and turkey about the walls of the church and do not care to see who takes them, so that the cura always finds in this way a supply provided — and even he considers himself doing a charitable act in taking them, since, if the natives observe that the eggs remain long in the places where they put them they are greatly disquieted. It should be said that the cura loses no occasion for making them quit such practices.

“When women are about to give birth to a child, the husband spreads ashes on the ground not far from the house and constantly examines whether there is track of some animal thereon, since the Mixes believe that the babe will live while this animal lives.

* * * * *

“When there is an earthquake or it rains much, the sexton enters the church with a lighted candle and all believe that nothing will happen, while he remains there.

“They are accustomed to ask that a mass be said in order that they may the more efficaciously harm their adversaries and it is difficult to make them understand that this is not proper.

“They celebrate the day of the assumption by visiting the pools of water in the mountains and they pray their gods to make known by the waters whether the year will be good or bad, finishing by begging that the year may be fruitful.

“In the pueblo of Betaza are many wizards and they make use, chiefly, of the form of the serpent to impress the people. They entice snakes into their houses and also make imitation snakes in wood: they make the people believe that they can, by their incantations, change the wooden snakes into living serpents at will. They carry fruit, eggs, turkeys, chickens, hens, bread and sweet cakes to the Lake of Yatie, which is on the road from the village to Villa Alta, in which lake they kill the fowls and throw them into the water with the idea of praying to father God for their families.

* * * * *

“In the pueblo of Tepustepec, when the authorities assume office, they go to the mountains with fowls, eggs, and cornmeal, and drench the soil with the blood of these animals, the contents of the eggs and the meal; they select for this purpose the cascades, rapid currents, springs, caves and cliffs. On returning to the pueblo the most venerable of them throws cornmeal around the handle of the staff of office

and upon the head of the *alcalde* that all may go well. The new *alcalde* then proceeds, well satisfied, to the church to pray. When they desire sons they go to a cave carrying *tamales*; in one of these, which they call *the principal*, they place pellets of corn dough, according to the sons they desire, and decorate it all with little rolls of the most tender pine roots (?) they can find.

"In the pueblo of Tamasalapa, where they are mostly carriers or merchants, before setting forth on a journey, they sprinkle the blood of a chicken in a cave where there is a spring, leaving the head of the fowl there but eating the rest of the body. If they see a serpent in the road they return at once to the pueblo, because they believe that it is a sure sign that things will go ill, and they defer their journey for a week. If there is no ill omen and they buy their *chilis* cheaply, they buy some *tepache*, and having spilled part of it upon the ground for the souls, they drink the rest. When they find themselves ill, they go also to see those they call *abogados*, that they may suck the sick spot. And these, as has been said above, make them believe that they draw out stones, spines wrapped in *ixtli*, and other things which they say enemies have placed there; and if the diseased are avaricious persons and do not care to reward them, they bring forth *mescal* and cigarettes, making them believe that all this was in the sick spot.

"On New Years and Christmas Eve, they go at night to a cave where there are two subangular stones, three-quarters of a yard high, a yard and a half in circumference at the base and a yard at the top. They say these are the patron saints, Peter and Paul, and they carry thither *tamales* and turkeys; they leave the head there and drench the ground around with the blood, as also with little vessels-full of *tepache*. In their sown fields they are accustomed to bury a chicken, which they go to examine every few days, and if the remains contain many worms, it shows that there will be a good year.

"In Chichicastepec they bury, behind the church and among the cliffs, tender young dogs, eggs, cornmeal, and, in a leaf, blood and three feathers of a chicken.

"The present parish priest at Ayutla took away an idol from the people of that town: they kept it hidden in a cave and burned candles and sacrificed animals to it.

"In the parish of Atitlan, beyond that which we have already said of the thunder-bolt, they have the custom of killing a snake and after

burying it they surround it with hens' eggs and then they repeat the following — *ya te di tu presente, no me hagas nada, y haz que se me dé mi cosecha*. (There I have given you your gift: do me no harm and cause that my crop shall come.)

"Also they generally believe, when children are born, that they have their *tona*, and they learn from the *abogado* about this animal or *tona*, which each child has, taking great interest in knowing it, because they believe that, if this animal dies, the child will die at the same time.

"When hunters kill a deer, they place its head upon a certain stone and they never give away this trophy nor sell it, no matter for what price, since they believe that from then good luck would abandon them.

"When there are quarrels and contentions between a husband and wife, they go to ask an *abogado* how the matter is explicable. And he tells them because their names are much alike — for example *Tastahen* for the woman and *Xaxahen* for the man. They assert that, as the names are so similar, there is no remedy and that they ought never to have married each other; with which response, the couple keep on quarreling.

"In Lachirioag, they put food on the grave of their dead when they order a mass said, and a little below the site of the chapel, among some cliffs which are near by, they also place eatables; they believe this latter spot to be purgatory.

"In Tonaguaia, dependency of Totontepec, they buy large chickens at sowing time and cutting their throats at the borders of the fields already sown, they sprinkle these with the blood."

These quotations are not all regarding Mixes: some of the towns here named are Zapotec, but all are in the same region.

The Mixes delight in rather elaborate celebration of their *fiestas*. They have a variety of dances and dramatic performances: these have been much influenced by Spanish ideas. They retain, however, some hints of Indian life in the costumes and musical instruments. Thus the old rattle, made of the hard and round fruit of a tree, is still retained. Curious wands of feathers or down used in the *Dansa de la Conquista* seem to reproduce some aboriginal object. At San Juan Guichocobi they have long used the *mai-yä*: a good specimen of this from that place is now in possession of Bishop Mora of Tehuantepec. (Fig. 47.) It consists of a two-bodied brownish-black earthen vessel,

the round bodies being one above the other ; over the aperture at the top of the upper body is tied an iguana skin : a neck and head of some animal or bird project from the lower body and a hole in the back of the head serves for air escape. The sound given by this pot drum when beaten is clear and fine. The specimen measures 1 ft. 3 in. in height and 9 in. in diameter.

The old writers refer to cannibalism as a practice among the Mixes. We made inquiry in this matter and received many reports that it has existed until quite recently. Father José Maria Hernandez, Cura in 1896 at Juquila, insists that the practice was not uncommon at Chichicastepec, Mixistlan and Jacotch no more than sixty years before ; he claims that travelers stopping in these towns over night were invited to rest in the *temascal* as the nights were cold ; after the *temascal* was heated, and the stranger had entered, red peppers were thrown in and the entrance closed : the fumes were to choke the victim, who would afterward be cooked and eaten. An old Zapotec who had lived in Juquila for forty years, in 1896, and whose statements I have usually found trustworthy, says he has never known cannibalism in Juquila or the neighboring towns but that it *has* occurred in Mixistlan within his knowledge. He also mentioned Chichicastepec and Jacotch but considered them as less addicted to the practice than Mixistlan.

THE JUAVES.

Orozco y Berra presents a summary of what had been written about this very curious and interesting people before his time. We know of nothing since. Some gentlemen at Tehuantepec and Juchitan have made some study of them but have not published their observations. Writers usually claim, following the traditions of the people themselves, that they have come from the south—either Peru or Central America. They have to-day but four villages, San Mateo del Mar, Santa Maria del Mar, San Francisco del Mar, and San Dionisio Del Mar. Ixhuatan, mentioned by Orozco, has long been abandoned. We can say nothing of the language but present a brief vocabulary. The people are conservative and are rarely visited by white men. Their towns lie at the edges of, or near, long and narrow, shallow lagoons of salt water reaching inland from the Pacific Ocean. The soil is sandy and not adapted to agriculture : some banana trees and cocoa palms seem to be the only cultivated plants. They have, however,—as they had generations ago—quantities of stock, cows and horses. There are many

wild rabbits. Still the people rarely eat meat, refraining from it, apparently from some superstitious motive, except on certain *fiestas*. The usual food consists of fish, eggs, and *tortillas* made with purchased maize.

San Mateo del Mar is perhaps the largest of the villages and is said to be the most conservative.* Our work was done there. The town lies on a nearly flat sand stretch: the plaza is an vaguely defined space with the municipal house on one side and the church on another. The walls of the houses are of cane set upright and of palm. (*Inds. So. Mex.*, Pl. CX, CXI.) Several buildings are usually grouped together, one of them being an open rectangular shelter. A wall of canes surrounds the whole group, giving privacy and protection against wind-blown sand. The Juaves have the general reputation of naked tribes. Those met along the road, in yards or houses, or down by the lagoon were but scantily clad. Boys go naked until ten or twelve years of age. Older boys and men commonly wear only a breech-clout and a head cloth. When they enter the plaza, however, they are required to wear further clothing and generally then wear hats. At home and about town outside the plaza women wear no *huipil*, but are naked from waist up. (*Inds. So. Mex.*, Pl. CXVI, CXVII.) The time is not long past when the Juave men used to go into Tehuantepec with only the breech-clout and women without the *huipil*. The teacher at San Mateo says that formerly the men shaved the forward part of the head. Two or three men of the village weave capital woolen jackets of brown or blackish colors, which may be worn in the evenings. It must be remembered that the temperature in these little sea-level towns is high and a sufficient excuse for scanty clothing. The *huipilis* worn by the women are rather neatly made: they are woven of home-spun cotton; from one to five vertical stripes of color divide the garment into spaces the central one of which is used for further decoration consisting of transverse (horizontal) lines of animal figures, geometrical designs, running lines, etc. These figures are curiously ill-defined and are usually made in pale purple (violet) or white. (Fig. 49.) The purple (violet) is a favorite color and is called *caracol* (snail). The dye is made among the Chontals (which see). Both men and women wear belts. Those of the men are red with narrow blue lines marking

* For much regarding the Juaves we are indebted to Dr. Castle, a practising English physician, living at Tehuantepec. Dr. Castle is interested in the natural history of the Isthmus, upon which he is good authority. He is one of the few white men who visit Juave villages.

them off into checks: the coarser white belts of the women are crossed at intervals by a set of three narrow black lines. *Servillettas* (napkins) of white cotton, for carrying hot *tortillas* may be decorated with inwoven figures of birds and geometrical patterns (Fig. 50) or embroidered with bolder designs (Fig. 51). The spindles and whorls used here are the same as those of the high Mixteca and Triqui country.

As they walk, or sit talking, men are always busy at their nets. These are made of cotton cord. The twisting spindle used in making this stout cord out of slender thread is of hardwood with a rather large but thin disk of wood cemented to it. The tip of the spindle is notched around and one end of the the cord made fast to it: there are notches about the edge of the whorl. The ball of yarn is carried and paid out between the fingers. The spindle is picked up with one hand and set whirling against the leg and thrown into the air. The tip and notches hold some thread firmly and the movement twists it into cord. When done, this is wound on the spindle, a new length is caught up, and the work proceeds. (Fig. 52.) In netting, a spool is used consisting of a slender shaft of wood with two conical pointed ends: the cord to be used is wound on this: a second stick holds the section of the edge of the net, at which stitching is progressing; the finished part of the net is attached to a little block of wood which serves as a toggle. (Fig. 53.) When they walk or converse the part of the net that is finished is wrapped about the waist and caught securely with this toggle. (*Inds. So. Mex.*, Pl. CXII, CXVib, also Fig. 53.) Two kinds of nets are made, conical cast nets and seines. Cast nets are widely used in Mexico—e. g. at the barranca near Guadalajara, at Tehuantepec, among the Juaves, among the Totanacos in Puebla, and elsewhere. Though constantly fishing and canoeing the Juaves are bad watermen. Few of them swim; the canoes they make are ugly and clumsy dug-outs made from great logs. They are slope pointed in front and almost squared or slope squared at the other end: they are flat bottomed and are rather neatly hollowed out; the walls are quite thin and are more widely separated midway of their height than at the bottom or upper edge. Some have three pairs of loops at intervals along the upper edge for clumsy oars, but the usual mode of propulsion is poling. The fishermen usually carry a spear, with a pole shaft and a long, square-sectioned, iron point. This is used chiefly in keeping alligators from attack.

The Juaves catch many fish and enormous quantities of shrimps.

They also make or gather salt at drying lagoons. These products permit a commerce. Zapotecs from San Blas, and Tehuantepec, but especially from Juchitan, make regular visits to the pueblos bringing maize, *sacate*, chocolate, bread, *chicos zapotes*, raw cotton, etc. One old woman, traveling in her ox-cart with her family, at night, makes two trips here weekly. Her stock is exchanged for fish, shrimps and eggs. These she carries to Juchitan, sells them, and fits herself out anew for San Mateo. In her transactions she sells by weight. Her scales consist of a pair of tin pans balanced on a beam. Her one weight—presumably a pound—is a neat round stone. She always weighs one pound of the material to sell, then she divides this between the pans till balanced, then divides these half pounds in the same way and so on to the desired quantity. Little coin passes in this commerce; it is chiefly barter.

There are many alligators and crocodiles in the lagoons; some of these are different from others in color, gray with greenish spottings; such are rarely disturbed and are considered *naguales*. This means that they are spiritually related to some human being and it is believed if one is killed that the person related to him will be found dead. The school teacher (1899) says these *nagual* alligators must really be *cristianos* (christians, i. e. human beings) as is proved by the fact that an alligator was once killed and a ring of gold was found upon one of his toes; the same night an old woman died. All alligators are treated well by Juave fishermen who, whenever they make a catch of fish, throw some of the fish back into the water as a gift for the reptiles. Once a man, who must have fallen out of his canoe and drowned, was found much decomposed floating in the lagoon; the top of his head had been eaten by alligators. It is commonly believed that this happened to him as a punishment for forgetting sometime to give them fish. Dr. Castle says that the red cloth about the head of old men signifies that they have given a certain number of public feasts. When the townspeople think a man is getting pretty far ahead in worldly goods they compel him to give a public feast which practically reduces him to poverty; if he gets into condition to repeat this he becomes a "principal" and assumes the red head-cloth. I suspect that there is confusion here and that the feasts are officially given and that the cloth, if significant, signifies the having held office. The Zapotecs and the *mestizos* of the district insist that there is a sacred cave, on an island, not far from the shore near San Dionisio and many stories are told of

unsuccessful attempts by outsiders to see it.—At Coixtlahuaca I met a Dominican who in the sixties was priest to the Juaves of San Mateo and in 1870 was sometimes at San Francisco. At that time at San Mateo they used two native musical instruments in a certain celebration. One of these was made of a turtle shell; the other, which is called *sam-po-ña* is a musical bow, made of the "spine" of a fish bent with a cord: one end is placed in the mouth while the other is held in the hand: it is played with another "spine." The celebration in which this was used is a pantomime. The performers first form a circle and salute each other: they are called to sudden attention, a discussion ensues, a search or investigation follows, etc.

THE CHONTALS.

An unfortunate confusion exists regarding these people. Orozco y Berra is partly to blame for it; Brinton has increased the confusion by an attempt to remove it. Orozco's error is in calling some of the more important Chontal towns Triqui: he also gives a list of real Chontal towns, but at the same time introduces at least one Zapotec town into his list—Tlacolulita. The Oaxaca Chontals live in the District of Tehuantepec. Brinton claims that Chontal is a misnomer: that it is the word meaning stranger, and not a tribal name; that it is equally applicable to many different tribes. That the word is Aztec, meaning stranger, is true: that the word is applicable to various tribes *may* be true, though not yet proved. That the name is regularly and consistently applied to the towns of Oaxaca above indicated is certain; that the people living in these towns call themselves Chontals, and speak one and the same language, which they call Chontal, is also certain. What reason, then, for doing away with the name and introducing a new term, Tequixtlatecan? Tequixtlan has a rather imposing rectangular *plaza* with a large well-built town house at the upper end and a large church at the lower end; along the two sides are schools, *tiendas*, etc., the latter being the property of *mestizos* of whom a considerable number live here. The houses (*Inds. So. Mex.*, Pl. CXXV, CXXVI) are much like the hot land Zapotec houses and call for little notice. There seems to be no characteristic dress—the women being clad much like those of the Tehuantepec district or like *mestizo* women generally. Their hair is neatly done up. It has a mid-part from in front down to the very base of growth and is braided into two braids. These are wound up onto the head where the tips

are tied together. Fishing in the river here has some importance. The Chontals are the makers of the purple (violet) dye already referred to (p. 148). Huamelula is the centre of the industry. The coloring matter is secreted by a sea slug—probably an *aplysia*—at a certain time of the year. At that time the people go to the coast and get the animal from tide-pools: a gentle pinch or blowing with the breath causes the flow of a milky fluid which is applied directly to the cotton yarn, staining it. The color of the yarn varies from a rather dark reddish purple to a violet, according to quantity of the staining fluid applied and the age of the goods. The yarn is sold and the weaving is done elsewhere—chiefly at Tehuantepec.

THE CUICATECS.

The pretty town of Cuicatlan, situated on the Mexican Southern Railroad between Puebla and Oaxaca, in the State of Oaxaca, is the capital of the district of the same name. Three tribes live in the District—the Cuicatecs, Mazatecs (in part) and Chinantecs (in part). The Cuicatecs at Papalo, where we examined them, are disagreeable and uninteresting Indians. They do not present a definite physical uniformity. The language is related to the Zapotec. Few women wear notable dress: *camisas* may have open-work decoration or pleating at the sleeves or narrow bands with inwrought designs in pale blue or black.—*Servilletas* or tableclothes of cotton are frequently embroidered with designs. (Fig. 54.)

THE CHINANTECS.

Little or nothing has been added by later Mexican writers to what Orozco y Berra states of the Chinantecs. He held that the language was unrelated to its neighbors and of uncertain affinity. Pimentel was inclined to locate it in the Mixteca-Zapoteca family. Both quote Burgoa who says:—"The utterance is through the closed teeth (*entre-dientes*) violent and with harsh consonantal, and compressed vowel sounds—not clearly distinguished, which appear like cries of animals rather than articulate speech." Barreda printed a *Christian Doctrine* in the language and Orozco thinks he was also author of an *Arte*. We have two ancient ms. vocabularies and a ms. book of sermons in our possession. The present speech appears to deserve much of Burgoa's criticism. There are several well marked dialects: that of San

Pedro is represented in our *Appendix*. The towns of the Chinantecs are in the Districts of Cuicatlan and Villa Alta in the State of Oaxaca. Garcia y Cubas in 1876 claimed 12,000 population. The physical type is admirably defined.

The Chinantla, in scenery, is one of the most beautiful parts of mountainous Mexico. The great mountains, clad usually with magnificent forests, the trees of which are loaded with bromelias, orchids, and other aerial or parasitic plants, and the vast valleys are wonderfully bold and varied. The climate, however, is disagreeable; there is practically no dry season, and chilly and drenching rains, dismal fogs and settling clouds frequently shut out the attractive scenery. Doubtless these disagreeable climatic conditions are largely to blame for the drunkenness which prevails in such towns as we have seen. The roads are naturally poor on account of the frequent rain. Streams subject to being swollen by downpours are often crossed by neatly made *hamacas*, or vine bridges. (*Sup.* Pl. II, and cf. *Inds. So. Mex.*, Pl. XCVIb.)

Houses vary considerably. At San Juan Zautla the walls may be built of stone (schist) laid in mud, of adobes, or of wooden slabs set upright. All are palm thatched and each usually has a little patch of bananas or other trees close by. At San Pedro Soochiapam they are well built, of large size and quite compactly grouped. Some have walls of stone and mud, but most are constructed of poles or narrow slabs set vertically and neatly corded together. The roofs are finely made palm thatches; the two greater surfaces are sharply sloped, the smaller end surfaces as much so. The two greater slopes do not, however, come to a sharp ridge line; the top of the roof is flat and the thatch is laid lengthwise: bunches of thatch material are laid across this or pegged down to hold it in place. Much cotton is used in San Juan and San Pedro. The raw cotton is brought from Usila and is beaten before it is spun. A great cushion or pillow is made of moss in a matting sack: over this is stretched and fastened a deerskin: upon this the cotton is laid and beaten with *ma-pa-ho*. These are composed of several sticks bound together so that at one end they can be easily held in the hand, while at the other they diverge. They are used in pairs, one in each hand and are vigorously plied alternately. The noise of the beating can be heard to a great distance. The result of their use is that the cotton is made into a smooth and even sheet which is then spun and afterward woven in the usual way. (*Sup.* Pls. IV, V; also Fig. 57.) The Chinantec men wear a characteristic red

cloth about the neck or head; sometimes a knot will be tied in one corner and this will be placed upon the head while the cloth falls down over the ears and back of the head upon the shoulders. These are woven here of cotton thread bought at Usila or Oaxaca ready dyed. They may be divided into rectangular areas by woven cross lines of yellow or black. At the corners and in a little group at the center are usually small designs worked in green, yellow, or purple wool; these are usually geometrical designs or stiff and conventional birds and animals. (Fig. 55.) The belts worn by men are of local manufacture. They are white with transverse decorative bands of red; or of red stuff with transverse lines or bands of open work or stitched patterns in wools. The *huipil* of the woman is of white cotton woven with stripes across in open work: it is decorated with bands of geometrical designs in colored wool and single figures or lines of figures in colored wool. The borders of the neck slit are decorated with needle work. (Fig. 56.) Both in the *huipil* and the men's head cloth the colored wool designs are worked in during the weaving with short lengths of wools, not embroidered later. *Servilletas* or *tortilla* cloths are woven in white cotton, with transverse bands of geometrical designs in raised wool — white or colored.

The hair-dressing of Chinantec women is eminently characteristic. The hair is mid-parted and done into two thick round braids: these are wrapped around and around with black cloth strips until they hang stiff and heavy, like large ropes down the back.

The domain of San Pedro is not great: it extends in the direction of San Juan about a half league and perhaps an equal distance in the other direction. The *Secretario* says the land that can be cultivated in any one year is only one-fifth the whole, so any given piece comes under cultivation but once in five years. The season for preparing and planting is April and May. The ground is cleared with hatchet hoes and permitted to lie two weeks: it is then turned over. In planting the holes are made with a pointed pole or rod of wood and five grains are dropped into each. The holes are made at about four feet intervals. Maize and beans are the only crops. Maize takes five months to ripen. Special fields are set apart the produce of which belongs to the *Municipio* or town government: in case this product surpasses a set maximum quantity, the surplus is divided among the laborers — (i. e., all the village). This municipal stock of grain is carefully stored and is sold at the regular price; from this sale the

incidental expenses of the government are paid.—A considerable trade goes on from village to village. Usila has already been named as the source of cotton; Papalo (Cuicatec town) supplies the *ocotes* or fat pine splints for torches. Considerable bark of *jocote* is gathered. This is taken off in long strips and done up in bundles. It is used as string or rope. The bark contains a juice which can be worked up in water so as to yield a suds which is a refreshing wash for the head; it is also used as a plaster in dressing wounds and in staying blood. —The intoxicant used here is of local manufacture and is called *chingare de caña* or *ma-tchi*. It is distilled from the sap of sugar cane. A large *olla* filled with *tepache* (fermented juice) is set over a fire and heated; above it is another vessel which receives the vapor and in which it is condensed by being chilled against the bottom of a vessel fitted above this: this upper vessel is of metal and is cooled by running water conveyed to it by a long tube and spout. The resulting drink is a somewhat clear, whitish, liquor of no great strength. Enormous quantities are drunk.

The *Secretario*, who was by far the most intelligent man at San Pedro, claims that they have no sacred caves and make no sacrifices in the fields. There are *brujas* (witches) and superstitious treatment of disease. An aunt — with whom he has quarreled because she failed to cure his daughter — knows the language of serpents, which is the source of her skill in medicine. —When he was *Presidente* once, he was making the nightly guard watch and saw a *bulto* (package, object), which he inferred to be a witch. The object disappeared, apparently by transformation, and in its place was a young bullock. Sure now that his suspicion was justified he shot the creature. Not long after a woman, generally suspected of being a witch, died.

THE CHOCHOS.

The name Chocho is said by Orozco to be applied to a language in Oaxaca, while to the same language in Puebla is given the name *popoloco*; it is also the *tlapaneco* of Guerrero, the *teco* of Michoacan, the *pupuluca* of Guatemala, and the ancient *Yope*. He considered the populations speaking these fragments of one of the oldest populations in the country. In the district we visited there is clear recognition that the language of the Chocho towns of Oaxaca is the same as the *popoloco* of Puebla but there appears to be usage of applying the term chocho to the people, the word *popoloco* to the language. Often

Chochos of Nativitas, Concepcion, and Coixtlahuaca, when asked what language they spoke, replied popoloco. The Chocho is considered related to the Mixtec and belongs to the Mixteca-Zapoteca family. Belmar has just prepared a valuable study of it. The Chocho towns are located in the District of Coixtlahuaca. The *cabecera* is a little town of well-built houses surrounding a great plaza: an interesting old church, on one side of this, faces the municipal and district buildings on the other. The population of the centre of the town is *mestizo*, but the outlying parts are purely Indian. These Indians have many of them forgotten their own dialect and speak only Spanish. They present little of ethnographic interest to the hurried traveler. Even women wear nothing characteristic in the way of dress, being clad in cottons and prints made on civilized looms, bought from the shops, and wearing *rebosos*: rarely one is seen with a pleated black woolen *enagua* and with a blanket of grey unbleached stuff instead of a *rebozo*. Babies are carried here in front, in the arms, tucked out of sight in the *rebozo* ends. Things are no better in the outlying pueblos. For example at Concepcion Buena Vista, it is said that fewer speak the *idioma* than at Coixtlahuaca and that the younger people frequently do not understand it: there also all go clad as *mestizos*.

Houses are rather characteristic (*Sup.*, Pl. XI): usually two occur together in one enclosure with from one to three or four little outhouses of various kinds. Some houses have neatly laid stone walls; in some these are quite covered over with plaster; in many the wall consists below of a line of stone slabs set up on edge, upon which is raised a wall of split poles set upright. In constructing these, posts are set at intervals for supports: the vertical split poles are held in place by lashing to horizontal poles: the lashing strips of bark are so managed that they appear as vertically crossing the horizontal poles. The framework for the thatching is closely and elaborately constructed of poles. The thatch of palm comes down far below the top of the walls and projects well beyond them; the end of the palm stalks of the upper lines of thatch project to form a serrate ridge. (Cf. Mixtec Tilantongo.) This may be bound over with *pencas* of maguey or the whole roof may be covered with these. The roofs are four-pitched and very steep and often come nearly to the ground; in such cases the thatch is cut away over the door to permit passage. The doorsill may be a stone slab set on edge or there may be a stone set flat as a step in front of a sill, consisting of a board or stone slab set on edge. In

houses with walls of stone, these are carefully mud plastered on the inside and often painted or otherwise decorated. A curious feature of Coixtlahuaca (and presumably elsewhere) is a "cave" at the side of the house: a neat square hole with steps cut in the soft tufa rock leads down into a little cavern just large enough for a couple of persons to seat themselves in. A little cross is scratched in the wall. In these caves the man and woman of the house sit to weave palm hats. The humidity of the cave prevents the rapid drying of the palm and thus facilitates the work. The braiding of palm is the chief industry of this people. Men work at sombrero making as they walk along the roads; prisoners in the jail, officials at the town house—all weave hats. They sell at four pesos a dozen. The *Jefe político* of the district asserts that the trade in the plaza amounts to 8,000 pesos monthly most of which is in *sombreros*. One of the Chocho towns near Coixtlahuaca is called "Tequixtepec of *sombreros*." Palm is also woven into *tenales*: these are usually plain, but those of Ixcatlan (a Chocho town, though of the District of Teotitlan,) are woven with colored designs upon the natural background. From shredded palm men twine ropes and lassos and they are often seen weaving at these as they walk along the roads.

On Chocho roads many cairns are heaped up by the passers. Between Cuicatlan and Coixtlahuaca, in a day's journey we probably passed seven or eight. The largest and most striking of these was heaped up at the base of the trunk of a fine shade-giving tree. The Chochos place these stones as they go to Cuicatlan for they believe if they fail to do so that they will never return. They also say that the stones are placed by weary travelers to quit themselves of weariness. In two cases near Cuicatlan the cairns were in pairs with a little distance, some yards or rods, between: midway between these was a little cross at which flowers and leafy branches are laid as offerings. In neither case were the cairns of these pairs of equal size and in both cases the larger cairn had grown up around a notably curiously shaped natural rock. Near Huauhtla, on the very crest, before reaching it on the out journey, we found a cairn with a little cross surmounting it, where our *mozo* claimed the Chochos dance as they pass, to secure safe return. Almoyos (probably Mixtec) has a bad reputation for witches. It is also said that there they have the habit when gathering sap for *mescal* to spill some on the ground: otherwise the plants will cease to yield sap.

The towns throughout this district bear Aztec or Spanish names. Some of the Chocho names are, however, still remembered or used. Tequixtepec is Ná-nín-gī—the hill of caves; Tepetlapan is Ā-tūng-dā-rhā—upon the rock near the river; Yucundacua is tūng-nā—behind the mountain; Ixcatlan is sū'-da; Concepcion is shā-rě-shā-shi—the pueblo of the Virgin; Tepelmeme is nā-sē—yellow mountain; San Antonio Abad is gi-si-nā—plain at the foot of the mountain; Tulancingo is ningā-singō (apparently a compound of Chocho and Aztec); Coixtlahuaca is ging-tcē—plain of serpents. The meanings usually are the same as those of the Aztec names.

The following table gives Orozco's list of Chocho towns, the names being given both in Aztec and Spanish where there are two names, and the population as officially reported to me in 1900:

	MALE.	FEMALE.	TOTAL.
Texquixtepec : San Miguel.....	708	640	1348
Tepetlapan : Santiago.....	206	210	416
Capulapan : Santa Cruz.....	70	74	144
Suchixtlahuaca : San Cristobal.....	539	453	992
Otla : San Geronimo.....	200	178	378
Nativitas : Santa Maria.....	1061	1059	2120
Yucundacua : Santa Catarina : (?) Nodón.....	114	114	228
Ixcatlan : Santa Maria. (In Dist. of Teotitlan)...			
Buena Vista : Concepción.....	363	345	708
Aztatla : San Miguel.....	180	231	411
Ihuatlan : { Plumas.* } Santiago. { }.....	389	341	730
Tlacotepec : { } La Natividad. { }.....	601	601	1202
Tepelmeme : Santo Domingo....	961	1046	2007
Tlapiltepec : San Mateo.....	590	531	1121
Jicotlan : Magdalena.....	328	321	649
San Antonio Abad.....	173	201	374
Tiopan : San Francisco.....	258	261	519
Tulancingo : San Miguel.....	643	633	1276
Coixtlahuaca : San Juan.....	1557	1546	3103

THE MAZATECS.

Orozco y Berra left the Mazateco unclassified: Pimentel gave examples of the Lord's Prayer in two dialects and seemed inclined to refer the language to the Mixteca-Zapoteca Family. Later writers

* Plumas is divided by a street into two parts—Ihuatlan and Tlacotepec.

have followed him. Belmar in 1892 published his *Ligero Estudio sobre la Lengua Mazateca* — a really important work. The towns of the Mazatecs are in fine mountain regions in the District of Cuicatlan and Teotitlan. Our work was done at Huauhtla in the District of Teotitlan, a *municipio* which claims 7,000 population, almost purely Indian. It lies at the crest of a magnificent slope, which is checkered with the fields of the population, almost to its base (*Sup.*, Pl. XV, XVI). Until recently this town was in the highest degree conservative but within a few years astonishing changes have taken place. Its municipal house is one of the largest and best built in Indian Mexico.

The population of Huauhtla is purely commercial: they are vendors in their plaza which on Sundays is crowded with people from other Mazatec pueblos. Until recently, though going to Teotitlan to market, they were too proud to carry the stuff they had for sale. Mrs. Debutrie tried to secure a cook among them: the woman was well satisfied with the work and pay offered except that it would be necessary for her to carry water and she feared she might be seen. Mr. Debutrie bought some shelves from a man of the town. They were dirty and he suggested that they should be cleaned before delivery. The man agreed saying that he would send for a San Lucas man to clean them. The people of the other pueblos near by are industrious but beyond all are those of San Lucas: "there are no other such workers." The San Lucas men are workers in wood also and make chairs, tables, boxes, beds or other things to order. They spend, however, all their earnings here for drink. On the whole the Mazatecs are a light-hearted people fond of music and gayety. The band at Huauhtla is the largest we have seen in an Indian town; they are kept practicing from daylight until late at night: the performers are boys and some of them must give way under the constant labor. There are many songs in the native language which are often accompanied by the accordeon. This instrument is a favorite and the people say it speaks — and that the language is Mazateco. The women at Huauhtla showed characteristic pride: when reporting for measurement all dressed in their finest *enaguas* and *huipilis* and ornaments: they were vexed, almost to spitefulness, if their portraits were not made. There are some cases in the town that appear to be purple *pinto*: and Mr. Debutrie says that at Chichotla there are many. *Pinto* is a disease common in many parts of Mexico. It is a discoloration of patches of the skin. There are three varieties, red, white and

purple. It is fearfully common in Guerrero and Chiapas and locally in some other states. It is a permanent disease and not painful except at a certain stage of the *red*. A curious flatness of the head in the occipital region is common here: it looks as if artificially produced but we did not succeed in satisfactorily deciding the question.

The dress of the Mazatecs is characteristic. Men wear dark blue or black *cotones* or slit *serapes* of wool as an overgarment: under these they wear white cotton *cotones* with vertical stripes of black or blue. (*Sup.*, Pl. XXI.) Some wear silk *cenidors* or girdles. These are of home-raised, home-spun, home-woven silk and are often of brilliant color: sometimes the initials of the owner are worked in silk near the end. The fashion now is to weave the silk girdles of bright hues in longitudinal stripes: formerly the colors were less brilliant and the striping was transverse. The women are gorgeous with their gay apparel. In some pueblos and on common occasions the *enagua* may consist of two strips of cloth, the upper white, the lower an ugly brown. But at Huauhtla usually, the *enaguas* are of white home-woven cotton with a wide band of brilliant (cochineal) embroidery in heavy geometrical designs: above this are embroidered horses, dogs, human figures, rosettes, etc. The color is, unfortunately, *not* fast and the garments are generally badly stained (two examples; Fig. 60). The *huipilis* are of fine home-woven cotton with more or less open work texture and are woven with large elaborate designs in rose red or dull blue. The simpler types bear eagles, a pair of birds perched facing, conventional designs resembling crabs, lobsters, etc. At times these will quite cover the breast or body of the garment. In many highly prized *huipilis* the patterns are in spaces marked off by sewing on bright ribbons, blue, crimson, or purple in color. These are applied single, double, or triple: they may be placed so as not to interfere with the embroidered decorations or may cut across them in any way. (Figs. 58, 59.) Women wear large ear-rings, usually of silver: a favorite pattern is a series of three crescents of different sizes with the tips coming together, but with each size hanging within the larger ones: they also wear many beads of which the favorite seem to be round red corals. The hair is carefully braided in two broad, flat, long braids which hang down the back: they are continued by inbraided coarse cords of black woolen yarn. (*Sup.*, Pl. XXII, XXIII.) In carrying burdens on the road the Mazatecs have a little rectangular open work basket made of twigs which they bear upon their shoulders.

The Mazatec houses are strikingly unlike those of the preceding tribes. (*Sup.*, Pl. XVII, XVIII.) The walls may be built of *adobes* or the lower part may be of *adobes* while the upper portion is of narrow boards set vertically and lashed to horizontal poles, or they may be of poles set closely, vertically, and lashed in place. It is however the thatched roof which is characteristic. The frame work, as usual, is of poles and bamboos lashed into position; an outside ridge pole lies upon the crest of thatch and projects well beyond the upper point of the smaller, end, slopes of thatch; these ends themselves support masses of thatch which project beyond the ends of the roof proper in the most curious way. Bunches of thatching material are bound astride the crest pole and pegged down. The houses are usually grouped in little level areas cut out from the slope. Two or three houses and an equal number of outhouses are often in one of these groups. The commonest outhouses are picturesque little granaries, with the same style of roof as the houses, set well up off the ground on posts. In some house groups there are thatched roofs of the usual kind set up on post supports and serving as shelters open to the air.

Mention has already been made of the silk culture. This is considerably pursued. The worms are cared for, the silk is reeled, dyed and woven. It is not lustrous as our own silk fabrics and rather coarse. Besides the girdles already mentioned it is woven into carrycloths or kerchiefs. There are some curious beliefs connected with rearing silk worms. Those who handle them must not eat garlic or onions, nor handle tomatoes nor *chilis* nor the clothing about a corpse or the silk worms will die. Should the handling of any of these things be absolutely necessary careful washing of the hands is enjoined ere having aught to do with the worms.—Huauhtla is proud of its *mapa* and *titulo*, both of which are carefully preserved. The latter is a quarto document, with a parchment cover and bearing date of 1763. The people believe the *mapa* to be about equally old. It is painted on a strip of coarse cotton, probably native woven, in red, black, yellow, and brown, and measures about seven feet by three feet ten inches. It represents a mountain district: various astonishing birds and animals are represented upon this landscape and considerable detail of geographical localities—roads, streams, mountains, caverns and villages.* On the whole the workmanship is not bad.

*The author has it in contemplation to reproduce his photograph of this curious geographical chart. Copies will be furnished at a nominal price.

Pisiētē is a green powder of the leaves of a plant. It is universally carried, in little calabashes or gourds which are fastened in the girdle or attached to some part of the clothing. It is used by people on the road to take away fatigue and also in *brujeria* — witchcraft. In *brujeria* it is used (a) to protect against witchcraft, (b) to cause witchcraft — thwarting others in their enterprises, causing illness or misfortune, etc. It is used in *brujeria* before the sun rises: a pinch is placed between the lower lip and the canine teeth on either side, a sip of wine is taken and formulæ are repeated. It was only with difficulty that some of this powder was secured and information as to its use. It was impossible to gain the formula.——When corn begins to form in the fields the services of a *curandero* must be secured. He is supplied with two turkeys or a sheep. He kills the victim or victims at the edge of the field and then walks around it, with proper formulæ, scattering blood from the headless trunk. This not only helps the crop but protects against robbers. In case anyone attempts to rob such a field, he will break out with dreadful sores. To bewitch an enemy carry three feathers from the wings or tail of a *guacomayo* (macaw) to a sorcerer, together with three cacao beans and an egg: he goes, before sunrise, to bury them upon the property of the victim.——A French gentleman named Debutrie lives in Huauhtla where he keeps a *tienda*; he also owns a coffee plantation a few leagues from there at Chichotla. He has been among the Mazatecs some seven years. He gave me the following information. He says it is matter of current belief that the people of Chichotla keep a great serpent in their church; that they leave *tortillas*, eggs, chickens, etc., for it and believe that its killing would bring dire misfortune on the village. Inhabitants of neighboring pueblos call this snake the god of the Chichotla people.——It is prevalent belief among Mazatecs that men can transform themselves into animals, especially “tigers,” and the people of Chichotla are especially ill-reputed in this respect. When a tiger is killed some one, usually an old woman, dies, and this was the person who was formerly a tiger. Not long ago a tiger was killed on the plantation of a Scotchman named Forsyth; in the morning an old woman was found there dead.——There are no old people at Chichotla, who were born there. All have moved in from San Lucas, Huauhtla, San Geronimo or other places. Nor did the dead parents of the younger people *belong* there. When questioned why there are no real Chichotla people — for there is ample evidence that the site

of the town has been long occupied — they declare that all the real Chichotla people have turned into tigers. — The Indians like to own black dogs, for they believe that, after death, they must cross a wide and deep river and in doing this they must seize and hold the tail of a black dog. — Cacao beans are much used in ceremonies. When a house is newly built a hole is dug below the place for the fire-place and cacao beans, eggs and small chickens may be there buried to secure good fortune. — After a baby is born, the god-parents may not wash their hands until after the christening in the church: then a feast takes place and the god-mother, sitting under the table, washes her own hands and those of her husband, who is seated at the table. Before a marriage the god-mother of the groom must wash him as if he were a baby; the god-mother of the bride does the same service for her. — At Huauhtla it is not customary to bury anything with the dead, except their finest clothing. At Chichotla the body of the dead is wrapped up in a rush mat, in a crouching position, and carried at a run, with blazing *ocotes* accompanying, to some place near the roadside, or preferably to a stream, where it is buried.

THE AZTECS AND OTOMIS OF HIDALGO AND THE DISTRICT OF HUACHINANGO, PUEBLA.

In Oaxaca the tribes occur as solid masses. The towns of the Chinantla are Chinantec towns; the whole district of Coixtlahuaca is Chocho; the little towns of the Juaves are near each other and taken together, mark out a small area, the speech and blood of which are purely Juave. There are, however, areas of Mexico where conditions are vastly different. Where the states of Hidalgo, Puebla and Vera Cruz come together we find the strangest interminglings. There Aztecs, Otomis, Tepehuas and Totonacs are surprisingly sprinkled. Where two insignificant little streams unite we may find the population between them of one speech, and those on each side of different languages. One town may speak one tongue, the next another; nay, even worse in a single village, two languages, two sets of costume and customs, two populations of different blood may exist side by side. Pahuatlan is the centre of a *municipio* of 14,000 souls; in its village of Tlaxco this intermingling reaches its extreme. There are four different peoples — Aztecs, Otomis, Tepehuas and Totonacs — all together; yet each preserves its independence in language, dress, superstitions and customs with wonderful tenacity. In regard to this

region, Orozco y Berra, usually so valuable, becomes frequently useless. A desirable piece of work would be to examine the towns of this whole area and to present accurate data regarding their language and blood. Our contact with Aztecs and Otomis here was incidental only to our work with Tepehuas and Totonacs. Still some matters regarding them seem worthy of record. Atla (called, by Orozco, Totonac), is Aztec; it lies on the slope opposite Pahuatlan near the crest. The women are industrious weavers and several of their products are quite characteristic. *Cotones* for men, are made of white cotton, with narrow stripes of black; the neck opening is square cut; the sleeves are open along the lower side except at the wrist, where sewn close. The garment is much shorter behind than in front, but both ends are decorated with transverse bands of red and purple, which not being in fast dyes, stain the stuff badly. (Fig. 61.) Men and women wear long belts some three inches wide of white cotton with varied designs of red and orange wool; these are wrought upon the ordinary simple looms. Quite characteristic are the little sacks or pouches of white cotton with woven designs in red and yellow—geometrical, stiff floral, bird, beast, and human figures—woven in them. All men carry them. (Fig. 63.) *Quichiquimels* of young women are simple little affairs of open texture cotton, with a vertical band of red, orange and black woven in. (Fig. 62.) Those of older women are of heavier and firmer cotton with a rather abundant decoration of inwoven patterns in the usual colors—red, orange and black. At many villages and at scattered country houses in this region they have quaint sacks made of armadillo shell. The shell is removed and bent while fresh into the desired shape; it is packed tightly full of ashes to make it retain its shape while drying. It is then hung to a cord which passes over the shoulder. It is used only for holding seed corn at planting time. (Fig. 68.) There is no better place in all Mexico for study of superstition than this district of mingled population. At Atla, in front of the church and to the right of the entrance, is a hole into which a few large stones are clumsily thrown or laid. It is *brujeria*, and a little search will reveal that chickens, flowers and eggs are buried there to secure luck or to restore health. At the crest above Atla is an erosion tower or turret, a striking feature for miles around. In its eastern face opens a witches' cave—a shallow, open cavern, well sheltered and dry. It may be 50 feet wide and 6 to 10 deep. Here are a little table, a couple of small chairs, blocks for chairs, cen-

sers, candlesticks, copal gum, festoons of yellow death flowers and immortelles, wands wrapped with corn husks and decorated with immortelles, clipped and cut paper, cotton, colored wools, etc. Here are two holes with inheaped stones, amid which are bones of fowls that have been sacrificed and *ocotes*, with *jonote* wrappings. The people of the village do not come here; only the *bruja*s. Nor is it *only* the property of the Atla sorcerers—it is common to the witches of four or five neighboring Aztec towns.

Otomis of this region we saw, or learned of, at Tlacuilotepec, San Pablito, San Bartolo, Ixtololoya and Pantepec. Tlacuilotepec is the centre of a *municipio* containing both Otomi and Totonac populations. San Pablito belongs to Pahuatlan and is only a short distance from there on the road to Tenango. San Bartolo is in the State of Hidalgo between Tenango and Huehuetla; Ixtololoya is in the *municipio* of Pantepec, in Puebla. Pantepec itself, outside the *mestizos*, is made up of Totonacs and Otomis, perhaps some thirty families of the latter. Three matters only will be touched upon—dress, paper making, superstitions. At San Pablito and San Bartolo the *quichiquimels* are characteristic; they are of coarse, white cotton cloth upon which rather delicate patterns are worked in blue, red, and purple. While considerable in quantity these are never so heavily wrought but that a considerable effect of the white ground work remains. Usually a band of rather dull purple is worked near the lower border. (Fig. 70.) At Pantepec these garments become more striking. One, by no means characteristic, is shown in Fig. 2. It is of coarse white cotton with heavy embroidered patterns in various bright colors. Far more characteristic are some which approach the Totonac types of the same village (cf. 65, 66, 67) but are quite readily distinguished by their smaller size, their usually darker (including black) embroidered designs and their absolutely complete decoration; hardly an inch of the original white ground of the garment is left exposed.—The art of beating paper from bark survives in many of these Otomi towns. San Gregorio (District Tenango, Hidalgo), Xalapa (District Zacualtipan, Hidalgo), San Pablito (Mun.^o Pahuatlan, Puebla), and Ixtololoya (Mun.^o Pantepec, Puebla) are towns where the art flourishes. At San Pablito two kinds of bark are used: *moral* gives a whitish, *xalama* a purplish paper. The bark is best gathered when full of sap, but is kept after drying. A board is used for a foundation on which to beat. A stone approximately rectangular and generally with the corners grooved for

convenient grasping is used for a beater. The bark is carefully washed in lyewater, taken from maize that has been prepared for *tortillas*; it is then washed in fresh water and finally boiled until it shreds readily into slender strips. These are arranged upon the board — first a boundary line for the future sheet of paper is laid out and then strips are laid near together lengthwise within this outline. They are then beaten with the stone until the spread fibres are felted together. The sheets are dried in the air, folded, and done up in packages of a dozen, which sell for three *centavos*. The work is done by women and usually in the houses with a certain degree of secrecy. The sound of the tapping of the stones is, at certain times, to be heard through the whole village (Fig. 72, board and two beaters). There is a large demand for this paper. It is not used, either for wrapping or for writing, but only for *brujeria* and ceremonies.

Thus, it is cut into *muñecos* (figures of persons, horses, or other creatures) upon which to practice witchcraft. At a trial in Pahuatlan the judge found upon the prisoner a figure cut in such paper intended to represent him (the magistrate): it had been sewn through the body and the lips were sewn through—this to prevent his pronouncing a sentence. By burying these about the house or *corral* of an enemy harm is wrought him or his animals. Mr. Albert Culin, an American who has lived some years at San Bartolo, has had many left at his house; he says they spot the place of the heart with blood and thrust spines through them. In the cave behind and above San Bartolo piles of them are sometimes left after gatherings of *brujas*. Bunches of them are left at places in the mountain roads to be trodden under by the passers. An old man at Pantepec says they are also useful in curing disease; a *bruja* will cut a figure to represent his patient patron: This is then worn by the subject at the place of the disease.—Otomi Indians in the *Municipio* of Tlacuilotepec (at Cuaxtla for example) celebrate annually *El Costumbre* ("the custom"). They believe that Montezuma will come again, and that, meantime, he it is who gives health, crops and all good to the people. They prepare a feast in his honor, of which he is believed to partake with them. An enclosure is prepared in a retired spot and a table made; upon it they place many *muñecos* of paper. Formerly they used the bark paper for these but now they buy paper in the *tiendas*. These figures may be so many as to cover the table two inches deep. They shove money — usually small silver pieces — under these figures. *Guajalotes* (turkeys),

hens, or other offerings are slain and the blood from the headless bodies is sprinkled over the *muñecos*; this they do that Montezuma may not be annoyed and that he may give them the things they may desire. After the feast the money and the figures are left upon the table and the *mestizos* steal the former.—San Pablito is renowned for its *brujerías*. They make much use of *muñecos* of wood of various sizes. A shoemaker in Pahuatlan drives a considerable trade in making shoes for these. He has little lasts for the purpose and sells a pair for five or six reales. Black shoes are made for male figures: red morocco ones for female. They also make small hats, *serapes*, *enaguas*, *quichiquimels*, etc., for these figures. Some of these they place in the church, or in the *sanctuario* where they hold their *costumbre*. They remove them from the church when they know the priest is coming. Others they take to a lake—famous for pilgrimages—in the District of Tenango, near San Pablo el Grande, where they leave them on the bank, or cast them into the water as offerings. They also throw money and other offerings into the lake. Don Pablo Lyra, *Jefe político* of Tenango, thoroughly informed regarding the Indians of the whole region, tells me that the lake is less patronized than formerly. While visited by Otomis (San Pablito and other towns) it is most sought by Huastecans who come in large parties, long distances. They visit it (a) when they have drought, for fear that the siren who dwells in it is annoyed at their neglect to give her gifts to propitiate her. (b) When there are too copious rains, to beg her to desist. (c) When crops are destroyed, to placate her. Sometimes two or three hundred in a company have passed through Huehuetla, where until lately Don Pablo lived. They carry their figures of wood, cloth, or clay: also of metal. These are shod, clad, and hatted. They carry various seeds and grains, which they throw into the water and some throw money therein. They sacrifice turkeys and hens. Sometimes the bands remain several days and dance and feast on the shore.—The Pahuatlan shoemaker says that sometimes they plant grain at the water's edge so that it may grow and yield food for the Lake: and that food and clothing are sometimes buried at the edge.

THE TEPEHUAS.

Orozco y Berra says: "Joined to the Totonaco there is met a spot formed of various pueblos in which they speak now one, now the other of these languages (Tepehua and Otomi) or both together. The *tepe-*

hua we have not encountered outside this place, and we have not been able to learn whether it is the same as, similar to, or different from some of the known languages." He then states that Tepehua is spoken exclusively only at the pueblo of San Francisco of the curacy of Huayacocotla. He then gives a list of four towns where Tepehua and Otomi are jointly spoken. All five of his Tepehua towns are in the State of Vera Cruz and he considered the language confined to that state. In this he is in error. Huehuetla, (Dist. Tenango, Hidalgo), is purely Tepehua, and a large town (*Sup.*, Pl. XXIX) Tlaxco in the State of Puebla, is in part Tepehua. We were unable to work out the list of Tepehua towns for lack of time, but there are several to add to the list. We hope to later make a study of the Tepehua language, but suggest now its probable relation to Totonaco. In character the Tepehuas are notably conservative. The Otomis, who live in the same villages with them, will readily go out to service with whites; the Tepehuas do not care to do so—and if they consent at times, it is only for a few days and as a favor. Nor will they eat at their employer's house, but carry their food home with them.

The women weave fine and strong belts with white cotton foundation and heavy black woolen raised geometrical figures. They wear two kinds of *quichiquimels*: one, the usual, is made of light and open cotton stuff with ribbons sewed on for decoration, one or two bands of red embroidery, and a few figures—generally of bird and quadruped, though also of geometrical designs. (Fig. 64.) The other style, worn by older women, contains more and heavier embroidery within a band of bright color running parallel to the edge of the garment. In *camisas* the decoration is black silk work similar to that of the Tlaxcalans and Aztecs near Puebla de los Angeles. Many of the men wear garments made of homespun cotton, but with no peculiarity in the cut or the make up. It is said that the men of some Tepehua towns have embroidered animal and bird figures on their trousers. We have not seen such. The women are somewhat particular in regard to the cleanness of their garments. Their plain white *enaguas*, white *camisas*, *quichiquimels* already described and black belts make a good combination. (*Sup.*, Pl. XXX.) They wear many necklaces of bright beads. Their hair is made up into two braids which at the tips are braided in with black, brown, red, maroon or green tape: the braids are brought together above the head and knotted there over the central parting, which runs full length from front to rear.

Of course these Indians are agricultural. At Huehuetla, which is on a considerable stream, much fishing takes place. Casting and other nets are used. A certain kind of night fishing is picturesque. Boys and women, less frequently men, go to the river at night with blazing bunches of corn husks for torches in one hand and a short machete in the other; they wade out into the stream and look carefully at the stony bottom. The instant a fish is seen a sudden stroke is made with the machete and the injured or dead creature seized. Recently in this whole region the Indians have learned to explode dynamite in fish-y waters: the havoc has been fearful, and stringent laws are in force against a practice by which the streams would soon be depleted. Mr. Culin tells me that the Tepehuas are fond of a certain worm for food, which the Otomis will not eat. The creature is described as several inches in length, of a rich brown color, with a velvety sheen, though a hard, shelly exterior; it is the interior only that is eaten.

The same gentleman called my attention to the fact that there are several celebrations here of a popular kind. The favorites are two that take place at the same time, the two sets of performers occupying different parts of the plaza. These are the Pastores and the Snake Dance—*Danza de la culebra*. In the former the players carry *teponastls* made of exceedingly hard wood. These they carry on the finger and strike with a little stick. They are of the ancient form, but *small*: many of them are adorned with tissue paper decorations. (Fig. 69.) The songs in both these dances are in Tepehua. In the snake dance there are two male leaders and a *malinche*: it derives its name from a great snake, with a wooden head and a body of rags, which is carried and plays a part: it is painted with native pigments—chiefly yellow and white. An object in the *danza* is to kill the snake, and various players try in turn to accomplish that end; finally the *malinche* (woman) succeeds. Unfortunately we had no opportunity to witness these dances. At Huehuetla ancient idols and parts of figures are now objects of veneration. A number such are in the keeping of a certain man, who attends to their receiving copal, candles and flowers at proper times. They are dressed with proper garments and hats. On certain occasions they are brought out and worship ceremonies conducted. San Miguel's Day (Sept. 16th,) the time of sowing, the time of harvest and the time of the first cutting of sugar cane, are fixed times for their employment. On these occasions incense and candles are burned; the idols are taken in the hands and the wor-

shippers dance to the sound of music: at the same time the idols are moved and are believed to be dancing of their own volition with the devotees. They thus show their good will and will send the desired blessings. When there is too much rain the worshipers go in procession with these idols to the river, playing music and dancing the idols; when there arrived they peg down little *ayates* (carrying cloths) and *costales* (sacks) made for the occasion in the water *against* the flow—as if to dam it back. On the other hand, in time of drought, the procession goes with the idols to a cave where there is a feast of *tamales*, *atole*, etc., and a dance in which the participants hold wands wrapped with corn husks and tipped with everlasting flowers.

THE TOTONACS.

These Indians, forming a considerable population in the States of Puebla and Vera Cruz — perhaps nearly 100,000 — are linguistically related according to Orozco y Berra with the Huastecans. We have seen them only at Santa Maria (a village belonging to Tlacuilotepec) and Pantepec and our stay among them was brief. They—as well as the Otomis, Aztecs, and Tepehuas of the same district are great raisers of cane and there are hundreds of little shelters among these magnificent mountains where the Indians manufacture their sugar. There is also much fruit raised, especially bananas and pineapples. At Santa Maria the men wear *cotonés*, of a black and white striped stuff, which are longer in front than behind. The women wear *quichiquimels* of rather good heavy cotton: the neck opening is overhemmed with black wool and narrow lines of black wool divide each face of the garment into two unequal parts. Lines of rosettes and other small patterns in various colors and a band of red running parallel to the border of the garment form the decoration (Fig. 65).

Pantepec is situated on the crest of a ridge overlooking a grand valley. The houses are built of poles which are daubed over with mud until a smooth, fairly finished wall is secured. The thatch is heavy and solid and well laid: it projects far beyond the walls and is squarely trimmed (*Sup.*, Pl. XXXV), the lines where the roof slopes meet are not sharply finished, but rounded, which gives, at a distance, a deceptively circular appearance to the house.—The Totonacs do a great deal of fishing. The favorite method is with a little pocket-shaped net which is attached to a U-shaped bow tightly strung with a cord. The ends of the bow are sharp and projecting beyond the

cord. This is set in the water so that the straight cord edge is at the bottom of the stream and the points thrust into the bottom, while the bow is held upside down and fish are driven into the net. The women of Pantepec (*Sup.*, Pl. XXXVII, XLIV) wear great *quichiquimels* of cotton wonderfully embroidered with heavy patterns of brilliant wools. They are regularly larger, more brilliant, and less solidly worked than those of the Otomis in the same town: red, yellow, orange, green and black may be worked into a mass of designs on a single garment. They are often worn with the points downward instead of horizontally (Figs. 66, 67.) Their *enaguas* are, like those of the Tepehuas, plain white cotton and rather closely bound about the body. The women dress their hair as the Tepehuas, but are more prone to use bright colored ribbons with it. Some of the Otomi and Totonac women in the Plaza at Pantepec are really gay with hair ribbons. They also wear many necklaces of gaudy beads and coral. Mothers carry their babies on the back, set diagonally, crosswise or astride and tie them firmly in place with a cotton *ayate* knotted in front, thus leaving their hands free for any movement. (*Sup.*, Pl. XXXIX.) Formerly men wore wide-legged cotton trousers, the lower part of which for several inches in width was made in most elaborately patterned open drawn work. They are now getting to be rare.—The Totonacs here are even more addicted to *danzas* and popular festivals than the Tepehuas. They also use the small *teponastles*. Among their *danzas* are the snake dance and the *Pastores*. The following claims to be a complete list with their dates:

Carnival: *Los Toros*: the bulls: a *malinche* takes part: a *pito* or whistle made of cane is used.

June 24: *Santiago*.

Vibora: snake. Much or quite the same as at Huehuetla.

Oct. 1st *Monarca*: monarch.

Tocotín:

Españoles: Spaniards.

Moros: Moors.

Las Inditas: The Indian women.

} These five are in progress at the same time. In the *last* one men are dressed in women's clothing.

Dec. 25th: *Los Pastores*: the Shepherds. *Teponastles* are used.

The *Costumbre* at Santa Maria is highly interesting. Four persons, three men and one woman, the latter of whom is chief, direct it. Its date is not exactly fixed but varies with the season. It is celebrated to secure health, weather and crops during the coming year and may be

especially held at time of sickness to free the people of the pestilence. Everyone attends and each brings something to the feast. Not only do men, heads of families, contribute, but widows and unmarried women. The celebration takes place in some selected house of large size and lasts two days. Floral decorations are constructed in the corners of the room and candles and incense are burned. Each person the first day brings a handful of earth from his field; this is placed upon the floor and the blood of turkeys, hens, and other animals slaughtered for the occasion, is sprinkled over it. After feasting and drinking they dance. The dancers of both sexes wear crowns and neckrings of the yellow flowers of arnica and in their hands carry wands wrapped with cornhusks and tipped with arnica flowers. The second day they bring corn on the ear and beans instead of earth, and these are sprinkled with the blood. At the home going of the second day each carries with him some of the earth and seed to place in his field to render it fruitful. In the room of the feast are suspended two round paper lanterns which represent the sun (and the moon?). Upon them are stuck bits of gilt and colored paper which represent the stars: a cross of blood is marked upon them at the time of sprinkling the earth and seed. At the close of the dance on the second day children shoot at these lanterns, with slender arrows or darts, trying to break them. During the *Costumbre* each person prepares *ocotes* for his field; these are little splints of fat pine, flat, thin splints perhaps three inches long, thicker at one than the other end. There are twelve of these in a bunch and they are tied together with *jonote* bark beaten out. They are sprinkled with the blood of the sacrifices. This bunch is wrapped in a banana leaf, care being taken to have the thick end of the splints and the lower end of the leaf downward: the upper face of the leaf must go next to the splints. When properly folded this package is buried upright, *facing* the rising sun, in a little hole dug in the field. The upper end of the package just reaches the level of the ground. — Santa Maria has its cave of idols, to which we would have been taken if time had permitted. — Almost as interesting is the *santocalli* (saints' house) as they call their wretched little church, where the old woman (leader of the *Costumbre*) and her assistants, male and female, conduct curious pagan rites before the virgin and Señor San José with prayers some of which are Latin and others Totonaco.

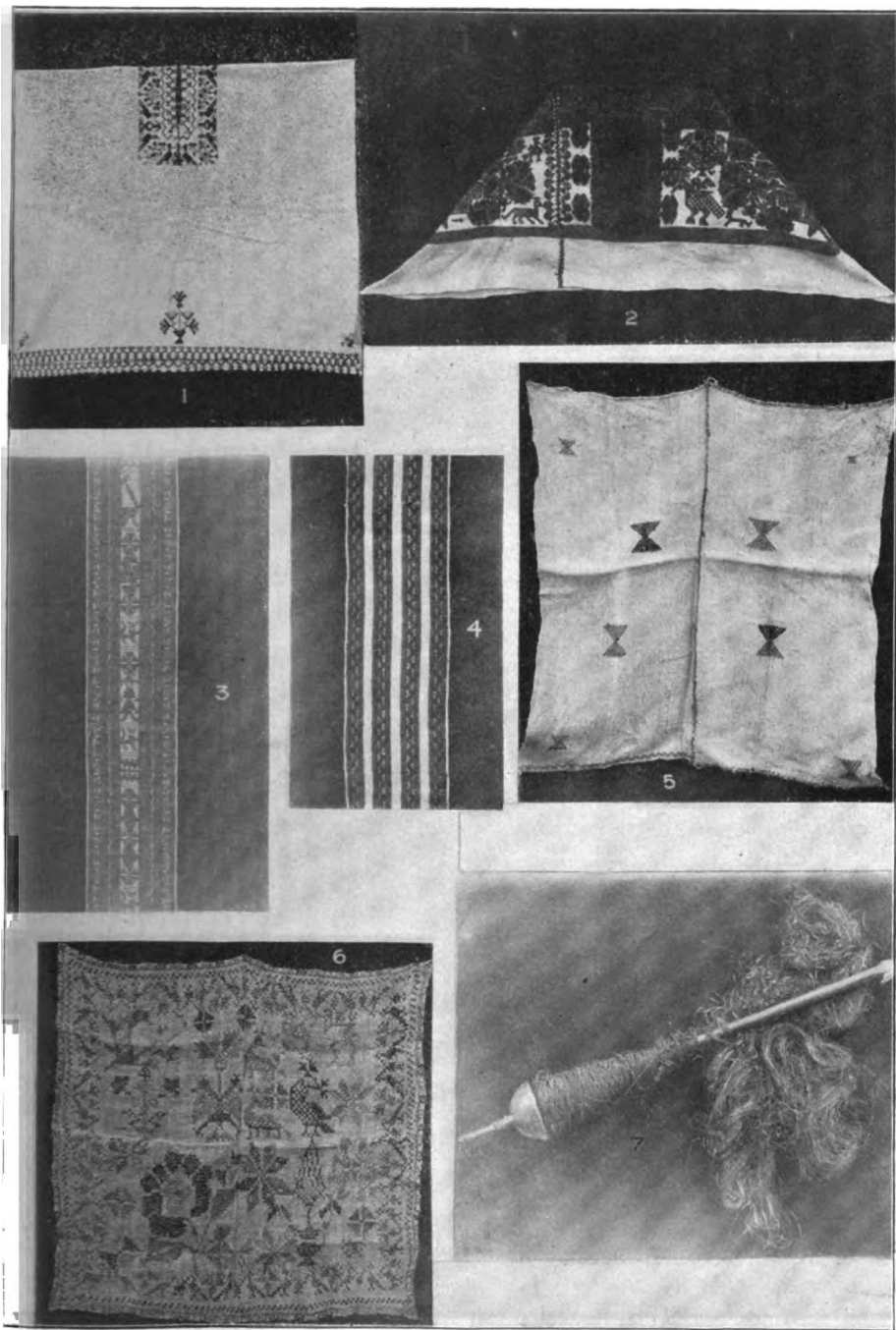
NOTE.—In this paper the references are as follows: *Inds. So. Mex.* is the author's *Indians of South Mexico*. *Sup.* is the supplementary volume to the same not yet published. *Figs.* referred to are those accompanying the present paper.

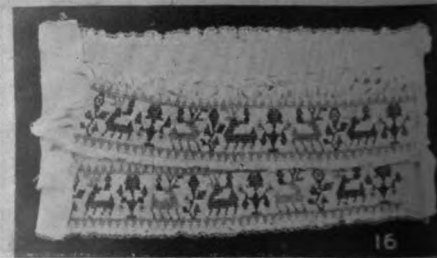
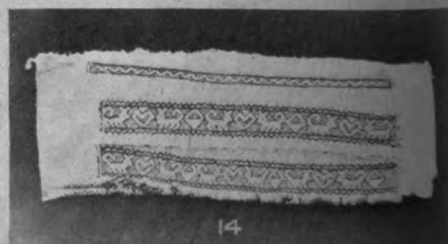
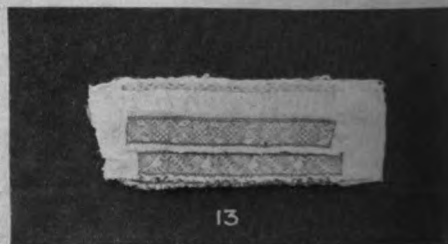
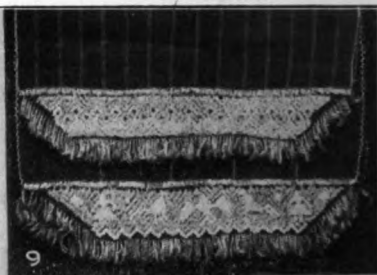
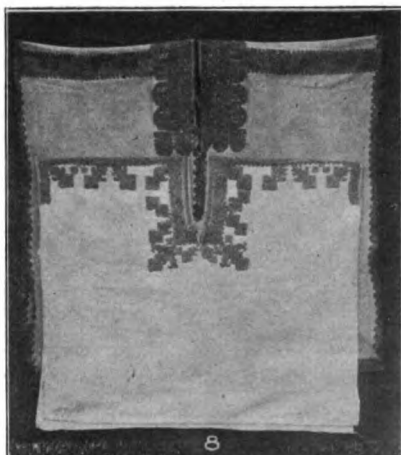
APPENDIX. SES.

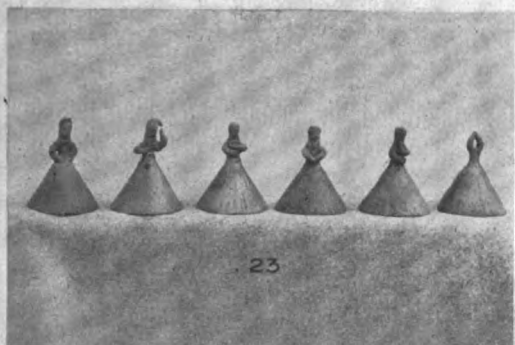
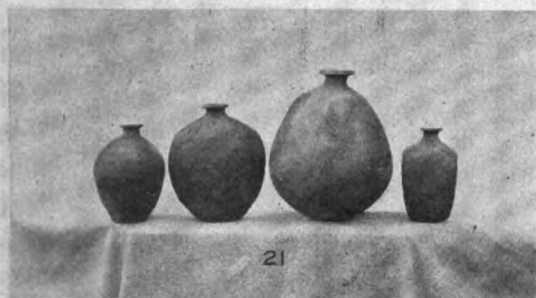
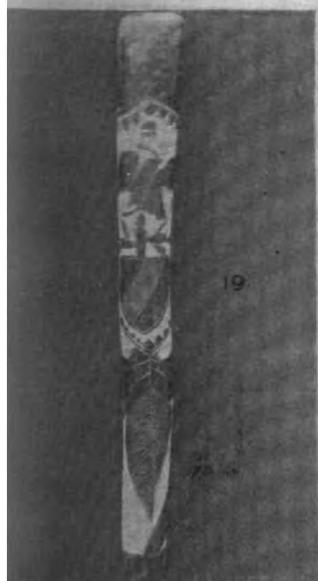
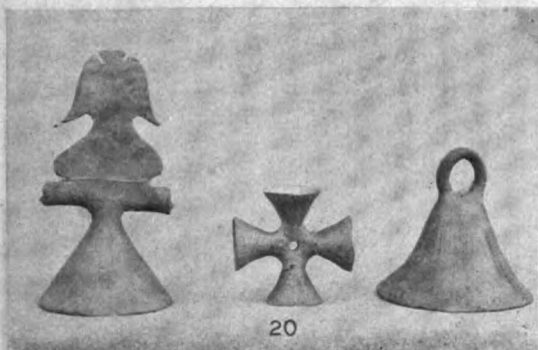
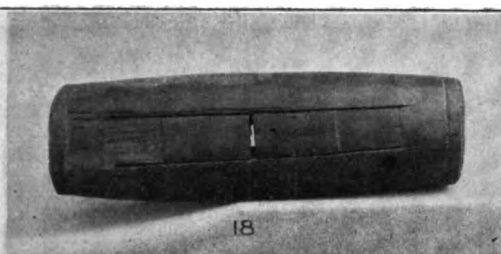
	CHOCHO.	TEPEHUA.	TOTONACO.
1. Man.....	ua	hōō-ā	chish-kō'
2. Woman.....	shi	tchā-kā-ōl	pūs-kā'
3. Boy.....	pē'	tsāl	kā-wā'-chō
4. Girl.....	pē	ā-tsi	tsū-mā-hāt
5. Father.....	'-nā	kim-pai	kin-tā-tā
6. Mother.....	-nā	ki-nāt	kin-tsi-i
7. Husband....	nā	kim-pō-kō-ōl	kin-kō-lō
8. Wife.....	i-na	kin-tē-wi	kin-pū-skāt
9. Son.....	ā	kin-tsul	kin-skā-tā
10. Daughter....	ā	kin-tsí	kin-tsū mā-hat
11. Older brother	shā shā-tū-hi	_____	kim-pūsh-kō
12. Younger brother	shā shā-wē-si	_____	ki-stān'-kō
13. Older sister.	_____	_____	kim-pi-pē'
14. Younger sister	_____	_____	shā-tsu ma-hat ki-
15. Head.....	tzru-hi	āk-sul	āk-shāk [stan kū
16. Hair.....		ai	yāk-ní
17. Face.....		ōk-shpō	lā-kā'
18. Ear.....	ni	ā'-kā-shkō'l	ā-kā-shkō'l
19. Eye.....	ū'-ni	lāk-chōl	lā-kās-tā-pūn
20. Nose.....	ū'-ni	hli-shin	ki-nō
21. Mouth.....	ā'-ni	kil	kil-hni
22. Tongue.....	-ni	si-mū-xāt	tsi-mā-xāt
23. Beard.....	ā zō-ā-ni	kail-tchā'-owt	kāl-tsā'-nē
24. Arm.....	ni	mās-tō'	pě-xēn
25. Hand.....		mā-kū	mā-kān
26. Leg.....	ū-ni	ā-tō'	tān-tsū
27. Foot.....	'-ni	tchā-hū'	tō-xōn'
28. Heart.....	mē-ni	ā-dhū-nūt	ākī-xū-nōk
29. Sun.....		ow-wil-tchān	tchī-tchī-ī
30. Moon.....	ō	māl-kū-yō	māl-kū-yū
31. Wind.....	ū	ūn	ū'-nē
32. Lightning...	-ē-ri	mā'-kā-lip-ní	mā-kīlp-nē'
33. Rain.....	i	lē-ish-kūn	pū'-shō-nō
34. Zacate.....		tchā-shtū	tsā-kāt
35. Maize.....		kūsh	kū'-shī
36. Calabash...		nīpsh	nīp-shi

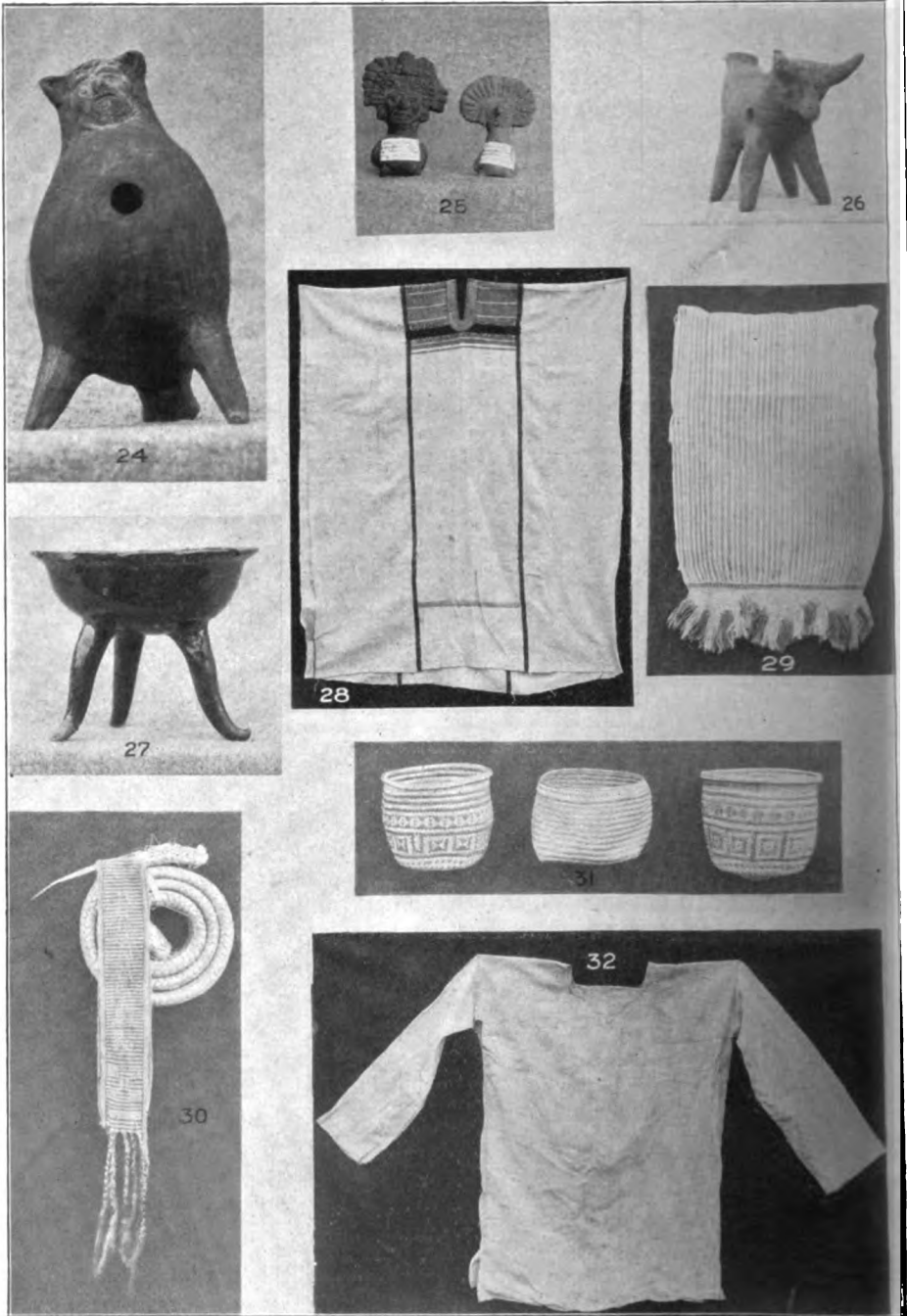
ATECO.	CHOCHO.	TEPEHUA.	TOTONACO.
37'g-trā	zrī-zrī-nŭ	hūkɿl	kō-kē
38	rī'-tzi	scow	skāk
39	rōā	yā-kākɿ	sā-kā'-kā
40	tiē	tsīt	tsī-tsā'-kē
41	gā'tzi	tsā-pāp	tsū-tsō-kō
42	sē	shkow-wow	shmā-kō-kō
43	dzū-ā	stā-ow	shkai-yā'-wā
44ŭ'	sīn-dī'-gnū	wēēn-kūn	wā-ka'
45	zūin-dā'	āt-kūn	kōt-kān'
46	dzū-hē-ni	hlta-kā-kūn	tā-tā-kān'
47ng-kwā	ni-shā-ni	tchi-wīn-kūn	tchi-win-ā-kān
48	zi-ēri-shrā	tchāl-kā-nān-kūn	skō-kūn
49	hū-ēri	shtāk-nī	māsh-ki-kūn
50j'	zān-gā-ri	xāl-thlūn-kūn	kāl-hlūn-kūn
51	gū	lā-ā-tūm	tlā'-kā-tin
52	dzō	lā-hā-toi	tlā-kā-tōl
53	gnē	lā-hā-tūt	tlā-kā-tō-tōn
54	gnūū	lā-hā-tātē	la-kā-tā-tē
55	dzoū	lā-hā-kis	la-kā-ki-tsis
56	shu	lā-hā-tchā-shūm	lā-kā-chā-shūn
57	dzādō	lā-hā-tū-hūn	la-ka-to-hon
58	tshi	lā-hā-tsū-hīn	lā-kā-tsai-yūn
59	gnāā	lā-hā-nū-hats	lā-kā-nā-hās
60	tē	lā-hā-kow	lā-kāl-xāō
61	tōng	lā-hā-kow-tām	lā-kā-xāō-tin
62	xā	lā-hā-kow-toi	lā-kā-xāō-toi
63	kā	lā-hā-pō-shūm	la-ka-pō-shan
64	kā-tē	la-ha-pō-shūm-kow	po-shan-ma-xāō
65.ā	dzā-kā	tō-pō-shūm	tō-pō-shūn
66.a-tē	dzā-kā-tē	tō-pō-shūm-kow	to-pō-shūm'-a-xāō
67	gnī'-kā	tō-tōm-pō-shūm	tō-tōm-pū-shūm
68.j-tē	gnī-ka-tē	tō-tōm-pō-shūm-kwo	to-tōm-pū-shūm-a-xāō
69.ā	gnū-kā	tā-tē-pō-shūm	ta-tē-pō-shūm
70.ā-kō-tē	gnū-kā-tē	tā-tē-pō-shūm-kow	ta-tē-po-shūm-a-xāō
71.j	ingō-siento	kē-ē-sē-pō-shūm	kī-tsis-pō-shūm

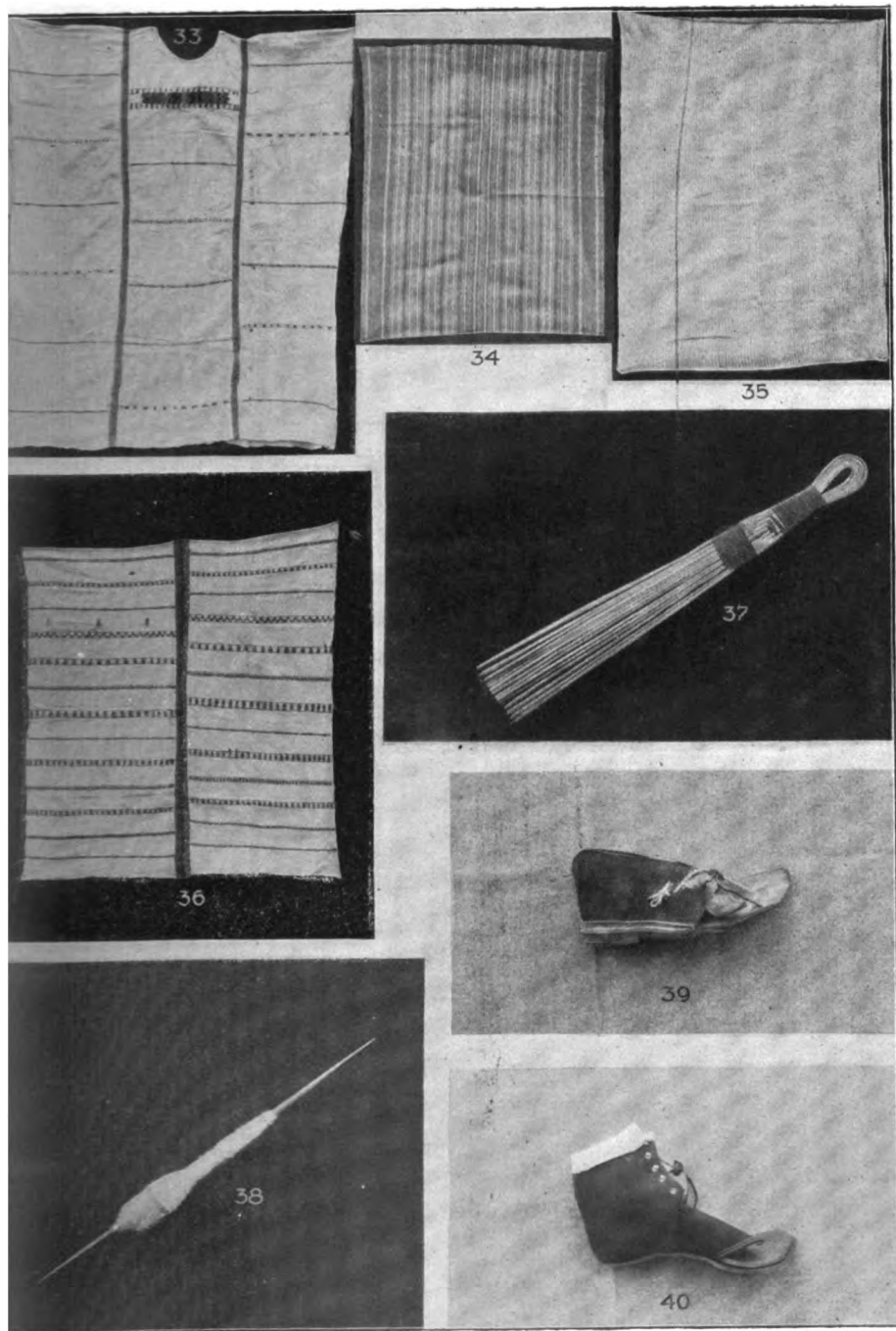
lack the words for one hundred and one thousand: in the lists of Mazateco testi the hundred is plainly borrowed from Spanish. Some color words are ther Chontal list. That in the same list, the Spanish word for *deer* should be the

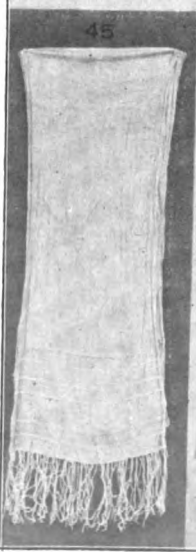
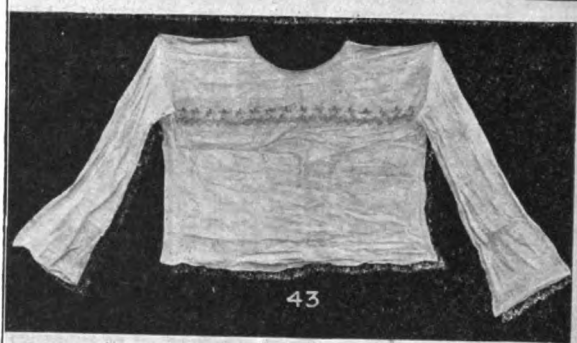
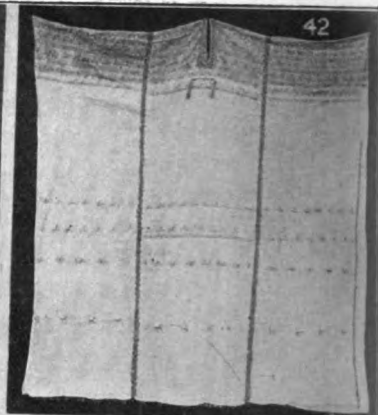
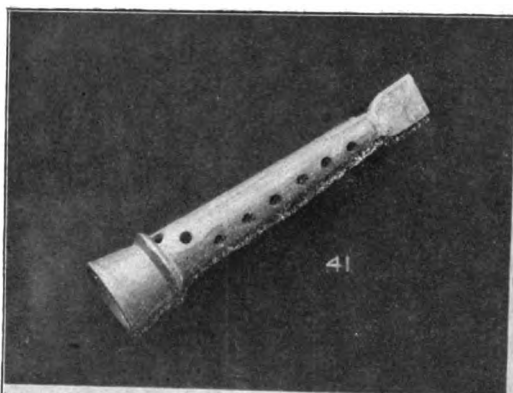


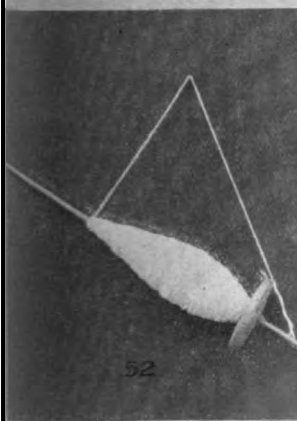
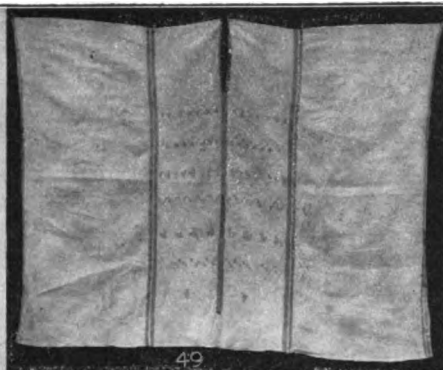


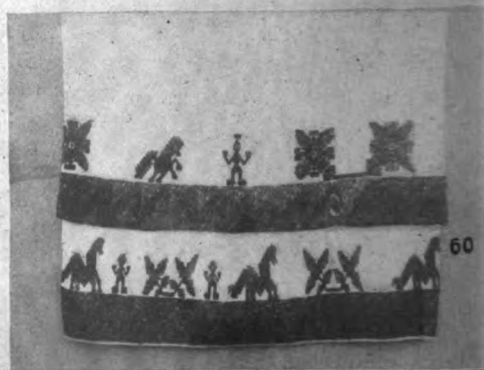
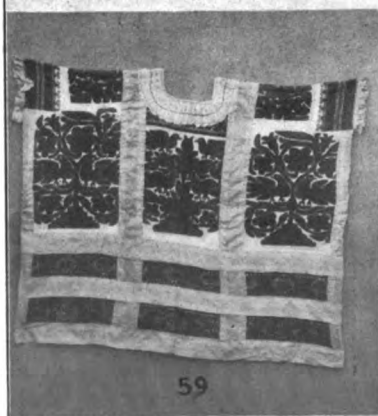
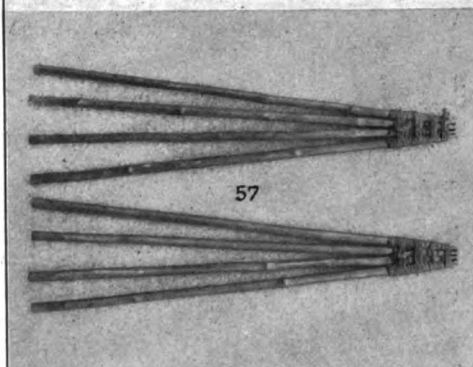
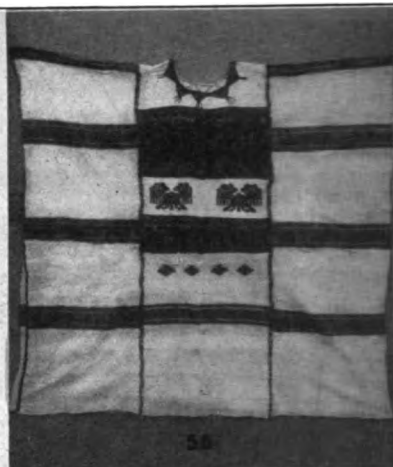
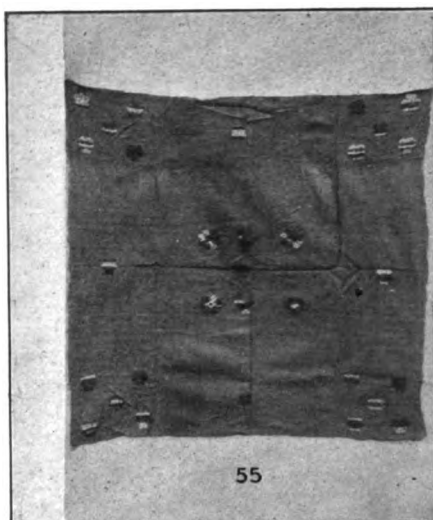


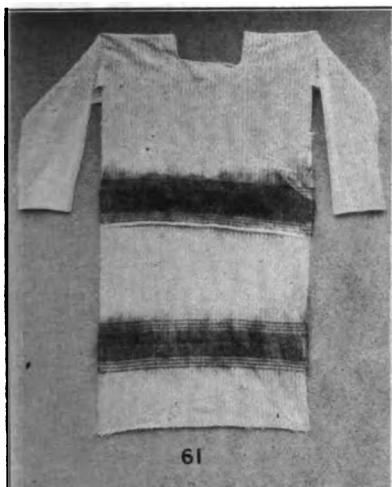




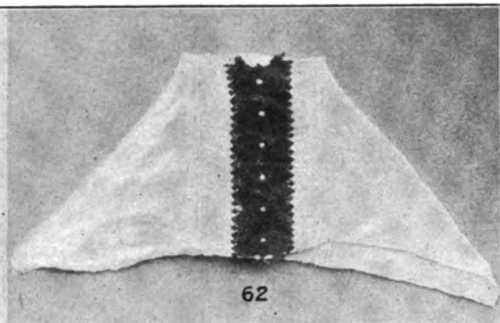




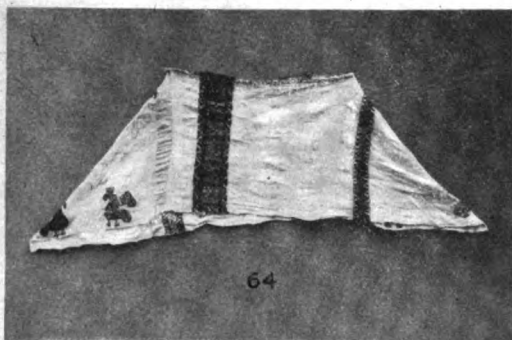




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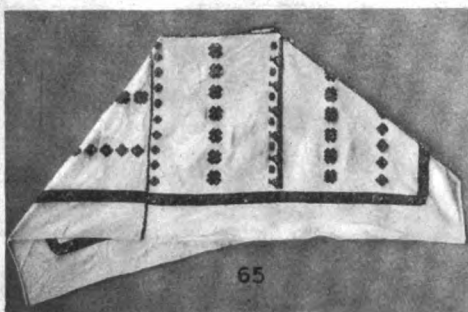
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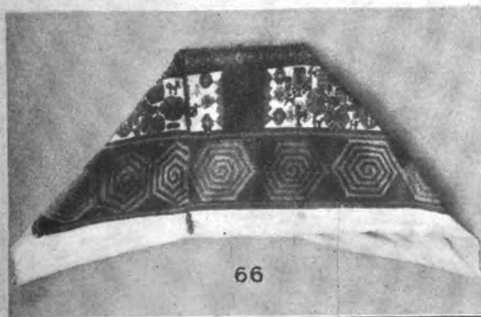
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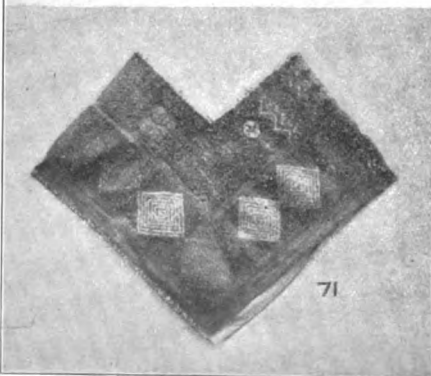
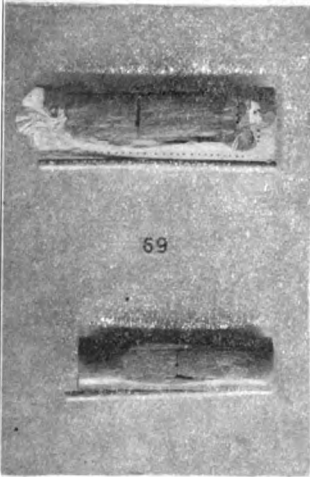
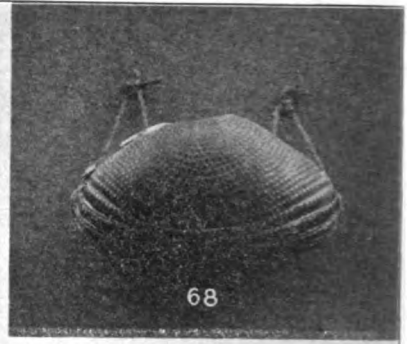
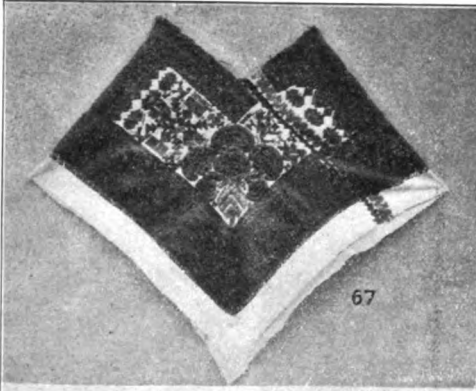
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65



66



THE FLORA OF SCOTT AND MUSCATINE COUNTIES.

BY W. D. BARNES, MORGAN PARK, ILLINOIS.
FRED REPPERT, MUSCATINE, IOWA.
A. A. MILLER, DAVENPORT, IOWA.

This enumeration of plants is compiled from a herbarium collected during ten years of field work ending with the year 1889.

As the woods of Scott county have nearly all been pastured, plants of a retiring disposition are fast disappearing, though occasionally found in Princeton township, Allen's Grove, Hickory Grove, and along the Wapsipinicon.

The change is not so noticeable in Muscatine county. The flora of Wild Cat Den is of special interest as it includes many rare species, some of which have not been reported from any other part of the state. As ponds are numerous near Muscatine and along the Cedar, aquatic plants are more abundant in this county than in Scott.

In both the native prairie plants and many introduced species are found along railroad tracks.

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The nomenclature of the Sixth Edition of Gray's Manual has been followed throughout, except in the genus *Carex*, in which the names given by Prof. Bailey have been retained.

1900.

THE AUTHORS.

RANUNCULACEA.

Clematis, L. Virgin's Bower.

1. *C. Virginiana*, L.
River banks and borders of thickets ; infrequent.
2. *C. Pitcheri*, Torr. & Gray.
Sandy soil along rivers ; frequent. A form with cream-colored flowers grows at Moscow.

Anemone, Tourn.

3. *A. Caroliniana*, Walt.
Sandy, alluvial soil along Cedar and Wapsipinicon Rivers, Muscatine Island, Camp McClellan. Infrequent, though often abundant over small areas.
4. *A. cylindrica*, Gray.
Hilly woodlands ; not common.
5. *A. Virginiana*, L.
Woods and river banks ; common.
6. *A. Pennsylvanica*, L.
Rather common.
7. *A. nemorosa*, L.
Rich wood lands ; infrequent.

Hepatica, Dill.

8. *H. acutiloba*, DC. Liver-leaf.
Rich, shady hillsides ; abundant locally.

Anemonella, Spach.

9. *A. thalictroides*. Rue-Anemone.
Open woods ; frequent.

Thalictrum, Tourn. Meadow-Rue.

10. *T. dioicum*, L.
Open woods ; frequent at Allen's Grove.
11. *T. purpurascens*, L.
Common.

Myosurus, Dill. Mouse-tail.

12. *M. minimus*, L.
Locally abundant in sandy, alluvial soil along Cedar and Wapsipinicon Rivers ; Muscatine Slough, Prof. Witter ; Offerman's Island, Dr. Radenhausen.

Ranunculus, Tourn. Buttercup. Crowfoot.

13. *R. circinatus*, Sibth.
Ponds near Muscatine ; rare. (Fitzpatrick.)
14. *R. aquatilis*, L., var. *trichophyllus*, Gray.
Ponds ; Noels, Muscatine Slough.
15. *R. multifidus*, Pursh.
Shallow ponds along Cedar and Wapsipinicon Rivers, Muscatine Island, Eldridge ; frequent.
16. *R. abortivus*, L. Small-flowered C.
Damp woods ; common.
17. *R. recurvatus*, Poir. Hooked C.
With the last but less frequent.
18. *R. fascicularis*, Muhl.
Common in open woods.
19. *R. septentrionalis*, Poir.
Damp places ; common.
20. *R. repens*, L.
Wet places ; frequent.
21. *R. Pennsylvanicus*, L. f. Bristly C.
Wet grounds, Muscatine Island ; not common.

Isopyrum, L.

22. *I. biternatum*, Torr. & Gray.
Sandy, alluvial soil in woodlands along Cedar River. Border of woods near Fairport, near Davenport. Infrequent.

Caltha, L.

23. *C. palustris*, L. Marsh Marigold.
Marshy places ; common.

Aquilegia, Tourn.

24. *A. Canadensis*, L. Columbine.
Rocky places ; frequent.

Delphinium, Tourn.

25. *D. azureum*, Michx. Larkspur.
Sandy soil Muscatine Island and along Cedar River. Flowers whitish.

Actæa, L.

26. *A. alba*, Bigel. White Baneberry.
Rich woods ; rather uncommon.

Hydrastis, Ellis.

27. *H. Canadensis*, L. Golden Seal.

Rich woodlands, Seventy-six Township, Muscatine county.
Scarce.

ANONACEÆ.**Asimina, Adans.**

28. *A. triloba*, Dunal. Papaw.

Near Drury's Landing. Less than a mile outside of our limits.

MENISPERMACEÆ.**Menispermum, L.**

29. *M. Canadense*, L. Moonseed.

Woods and river banks; frequent.

BERBERIDACEÆ.**Berberis, L.**

30. *B. vulgaris*, L. Barberry.

In woods, two miles west of Montpelier.

Caulophyllum, Michx.

31. *C. thalictroides*, Michx. Blue Cohosh.

Deep, rich woods; abundant locally.

Podophyllum, L.

32. *P. peltatum*, L. May-apple. Mandrake.

Rich woods; common.

NYMPHÆACEÆ.**Brasenia, Schreber.**

33. *B. peltata*, Pursh. Water-Shield.

In a pond on the sand hills along Cedar River. Lake T'w'p, Muscatine county. Found in flower, October, 1878; in 1872 a few young plants were found. The pond is now permanently dry.

Nelumbo, Tourn.

34. *N. lutea*, Pers. Water Chinquapin.

Ponds along the Mississippi River; not infrequent.

Nymphæa, Tourn.

35. *N. reniformis*, DC. Tuber-bearing Water Lily.

Ponds and slow-flowing water along rivers; frequent.

Nuphar, Smith.

36. *N. advena*, Ait. f. Yellow Pond Lily. Spatter-Dock.
With the last.

PAPAVERACEÆ.**Sanguinaria, Dill.**

37. *S. Canadensis*, L. Blood-root.
Rich woods ; frequent.

Argemone, L.

38. *A. Mexicana*, L. Mexican Poppy.
Escaped from gardens ; Blue Grass, Moscow, Eldridge, old
field near Muscatine.

FUMARIACEÆ.**Dicentra, Borkh.**

39. *D. cucullaria*, DC. Dutchman's Breeches.
Rich woods ; frequent.
40. *D. Canadensis*, DC. Squirrel Corn.
Hilly woods, Drury's Landing, Ill. (Witter, Mackenzie.)

Corydalis, Vent.

41. *C. flavula*, DC.
Sandy, alluvial soil opposite Muscatine. (Mackenzie.)
42. *C. micrantha*, Gray.
Banks of Cedar River, near Moscow Bridge.
43. *C. curvisiliqua*, Engelm.
Sandy embankments of the C., R. I. & P. R. R. between Dav-
port and Muscatine ; frequent. Determined at the Missouri
Botanical Garden.

CRUCIFERÆ.**Dentaria, Tourn. Toothwort.**

44. *D. laciniata*, Muhl.
Rich woods ; frequent.

Cardamine, Tourn.

45. *C. rhomboidea*, DC. Spring Cress.
Wet meadows ; common.
46. *C. rhomboidea*, DC., var. *purpurea*, Torr.
Moist woods along Wapsipinicon River.

47. *C. hirsuta*, L. Small Bitter Cress.
Wet places ; frequent.

Arabis, L. Rock Cress.

48. *A. hirsuta*, Scop.
Rocky places ; Muscatine county ; infrequent. Big Rock and Devil's Glen, Scott county.
49. *A. lævigata*, Poir.
Rocky soil at Wild Cat Den, Big Rock and Le Claire.
50. *A. Canadensis*, L. Sickie-pod.
Le Claire ; rare.
51. *A. confinis*, Watson.
Sandy soil, Cedar River region, Noels ; infrequent.
52. *A. dentata*, Torr. & Gray.
Sandy alluvial soil and borders of woods along Cedar River.
Muscatine Island.

Draba, Dill. Whitlow Grass.

53. *D. Caroliniana*, Walt.
Dry sandy soil ; Noels, Camp McClellan, Muscatine.

Nasturtium, R. Br. Water-Cress.

54. *N. sessiliflorum*, Nutt.
Banks of Mississippi River ; frequent.
55. *N. palustre*, DC. Marsh Cress.
Wet places ; common.
56. *N. lacustre*, Gray. Lake Cress.
Sloughs along Cedar River in the vicinity of Salisbury Bridge, Muscatine county. Ponds near Noels. Leaves fall off early and take root in the mud.
57. *N. Armoracia*, Fries. Horseradish.
Moist ground ; frequent.

Barbarea, R. Br.

58. *B. vulgaris*, R. Br. Winter Cress. Yellow Rocket.
Grain field near Fairport. Railroad track, Blue Grass.

Hesperis, Tourn.

59. *H. matronalis*, L. Rocket. Dame's Violet.
Escaped to roadsides. Blue Grass, Locust Street, Davenport.

Erysimum, Tourn.

60. *E. cheiranthoides*, L. Worm-seed Mustard.
Banks of streams ; infrequent.

Sisymbrium, Tourn. Hedge Mustard.

61. *S. canescens*, Nutt. Tansy Mustard.
Railroad tracks, Buffalo and Fairport.
62. *S. Sophia*, L.
Railroad tracks and waste places in West Davenport and Blue Grass.
63. *S. officinale*, Scop. Hedge Mustard.
Waste places ; common.
64. *S. altissimum*, L. Tumble Mustard.
Railroad track, Blue Grass, May, 1895 (single plant). Waste ground near B., C. R. & N. tracks in West Davenport (in quantity). Rock Island, 1896, (with *Salsola Kali*, L., var. *Tragus*, DC.) Eldridge, 1897. Becoming frequent.

Thelypodium, Endl.

65. *T. pennatifidum*, Watson.
Alluvial soil along the Mississippi and Cedar Rivers ; not common.

Brassica, Tourn.

66. *B. Sinapistrum*, Boiss. English Charlock.
Railroad tracks ; frequent.
67. *B. nigra*, Koch. Black Mustard.
Waste places ; common.
68. *B. campestris*, L.
Railroad tracks : infrequent.

Capsella, Medic.

69. *C. Bursa-pastoris*, Moench. Shepherd's Purse.
Waste places ; very common.

Thlaspi, Tourn.

70. *T. arvense*, L.
River front, Muscatine.

Lepidium, Tourn. Peppergrass.

71. *L. Virginicum*, L.
Frequent.
72. *L. intermedium*, Gray.
Common.

Raphanus, Tourn.

73. *R. sativus*, L.
Found with the several species of *Brassica* on railroad tracks but not persisting for more than a year or two.

CAPPARIDACEÆ

Cristatella, Nutt.

- 74.
- C. Jamesii*
- , Torr. & Gray.

Rather frequent along sandy shores of the Cedar near the B., C. R. & N. railroad bridge. This plant has been reported as a narrow-leaved form of *Polanisia graveolens*, Raf.

Polanisia, Raf.

- 75.
- P. graveolens*
- , Raf.

Sandy soil along Cedar River ; infrequent.

- 76.
- P. trachyosperma*
- , Torr. & Gray

Sandy soil, especially along the Mississippi and Wapsipinicon Rivers ; frequent. More widely distributed than the last species.

CISTACEÆ.

Helianthemum, Tourn. Rock Rose.

- 77.
- H. Canadense*
- , Michx. Frost-weed.

Dry, gravelly soil ; frequent.

Lechea, Kalm. Pinweed.

- 78.
- L. tenuifolia*
- , Michx.

Dry soil ; infrequent.

- 79.
- L. stricta*
- , Leggett.

Prairies on dry, sandy soil ; infrequent.

VIOLACEÆ

Viola, Tourn.

- 80.
- V. pedata*
- , L. Bird-foot Violet.

Borders of woods, hillsides and sand prairies. Not of general occurrence but sometimes abundant locally.

- 81.
- V. pedata*
- , L. var.
- bicolor*
- , Pursh.

Border of sandy woods, Lake T'w'p., Muscatine county ; with the type but infrequent or rare. May, 1891. Near Columbus Junction, Louisa county, 1890 (Prof. Witter).

- 82.
- V. pedatifida*
- , G. Don.

Dry prairies ; rather frequent.

- 83.
- V. palmata*
- , L.

Not common in Scott county. In Muscatine county limited

mostly to the Cedar River region. Very variable; some forms early in the season are not readily distinguishable from *V. sagittata*, Ait.; others again, are much like *V. pedatifida*, G. Don.

84. *V. palmata*, L., var. *cucullata*, Gray.
Low grounds; common in nearly all soils.
85. *V. sagittata*, Ait. Arrow-leaved Violet.
Dry soil; not common.
86. *V. blanda*, Willd. Small White Violet.
Wet places, Cedar River region.
87. *V. primulæfolia*, L. Primrose-leaved Violet.
Damp ground, Lake T'w'p., Muscatine county. Confined to a small area.
88. *V. lanceolata*, L. Lance-leaved Violet.
Wet places and margins of ponds, Lake T'w'p., Muscatine Co.
89. *V. pubescens*, Ait. Downy Yellow Violet.
Woods; common.

CARYOPHYLLACEÆ.

Saponaria, L.

90. *S. officinalis*, L. Soapwort. Bouncing Bet.
Railroad tracks and near dwellings; common.
91. *S. Vaccaria*, L.
Railroad tracks; Davenport, Blue Grass.

Silene, L. Catch fly. Campion.

92. *S. stellata*, Ait. Starry Campion.
River banks and open woods; common.
93. *S. nivea*, Otth.
Wild Cat Den. Railroad tracks near Montpelier and near Park Place on the Wilton Branch of the C. R. I. & P. Ry.
94. *S. antirrhina*, L. Sleepy Catchfly.
Dry soil; frequent.
95. *S. noctiflora*, L. Night-flowering Catchfly.
Streets, East Davenport. Along railroad tracks, Muscatine Island.

Lychnis, Tourn.

96. *L. Githago*, Lam. Corn Cockle.
Grain fields and railroad tracks; frequent.

Arenaria, L.

97. *A. lateriflora*, L. Sandwort.
Sandy soil ; rather common.

Stellaria, L.

98. *S. media*, Smith. Chickweed.
Moist, shady places in towns.
99. *S. longifolia*, Muhl. Long-leaved Stitchwort.
Noels, Allen's Grove, Wild Cat Den.

Cerastium, L. Mouse-ear Chickweed.

100. *C. viscosum*, L.
Sandy soil ; Noels. Abundant locally.
101. *C. vulgatum*, L.
Frequent.
102. *C. nutans*, Raf.
Moist places ; common.

PORTULACACEÆ.**Portulaca, Tourn.**

103. *P. oleracea*, L. Purslane.
Cultivated and waste grounds ; common.

Claytonia, Gronov.

104. *C. Virginica*, L. Spring Beauty.
Moist wooded hillsides ; abundant locally.

HYPERICACEÆ.**Hypericum, Tourn. St. John's-Wort.**

105. *H. Ascyron*,
Banks of streams and ditches ; not common.
106. *H. cistifolium*, Lam.
Dry soil ; common.
107. *H. maculatum*, Walt.
Moist soil ; infrequent.
108. *H. mutilum*, L.
Low ground ; frequent.
109. *H. gymnanthum*, Engelm. & Gray.
Low ground ; frequent.

110. *H. nudicaule*, Walt. Orange-grass. Pine-weed.
Sandy soil; Lake T'w'p, Muscatine county, 1890, and Noels,
Scott county. Muscatine Island, 1898, (Miss Hoffmann).

Elodes, Adans. Marsh St. John's-Wort.

111. *E. campanulata*, Pursh.
Wet grounds along Cedar River. Noels.

MALVACEÆ.

Malva, L. Mallow.

112. *M. rotundifolia*, L.
Yards and waste places; frequent.
113. *M. sylvestris*, L.
Escaped from gardens near old habitations; infrequent.
114. *M. crispa*, L.
Sparingly escaped at Pleasant Prairie, Muscatine county.

Callirrhœ, Nutt.

115. *C. triangulata*, Gray.
Sandy soil; local. Moscow. Near Davenport (Shimek).

Malvastrum, Gray.

116. *M. angustum*, Gray.
Government Island, August, 1865 (Dr. C. C. Parry). Rocky
roadside east of Gilbert, 1898. Abundant locally.

Sida, L.

117. *S. spinosa* L.
Rather frequent in dry soil; Muscatine county; Buffalo.

Abutilon, Tourn.

118. *A. Avicennæ*, Gaertn. Velvet Leaf.
Common and locally abundant in waste places and cultivated
fields.

Hibiscus, L. Rose Mallow.

119. *H. militaris*, Cav. Halberd-leaved R.
Frequent in wet grounds along rivers.
120. *H. Trionum*, L. Bladder Ketmia.
Roadsides; frequent. Abundant along many roadsides in
Blue Grass T'w'p., Scott county.

TILIACEÆ.

Tilia, Tourn.

121. *T. Americana*, L. Basswood.
Rich woods; common.

LINACEÆ.

Linum, Tourn.

122. *L. sulcatum*, Riddell. Yellow Flax.
Dry sterile soil; Cedar River region, Montpelier.
123. *L. usitatissimum*, L. Common Flax.
Railroad tracks; common.

GERANIACEÆ.

Geranium, Tourn. Cranesbill.

124. *G. maculatum*, L.
Open woods; common.
125. *G. Carolinianum*, L.
Sandy soil; along Cedar River; Muscatine Island and Noels.

Oxalis, L. Wood Sorrel.

126. *O. violacea*, L.
Open woods; common.
127. *O. corniculata*, L., var. *stricta*, Sav.
Common.

Impatiens, L. Balsam. Jewel-weed.

128. *I. pallida*, Nutt. Pale Touch-me-not.
Moist shady places; not infrequent.
129. *I. fulva*, Nutt. Spotted Touch-me-not.
Habitat same as that of preceding species. Rather common.

ZYGOPHYLLACEÆ.

Tribulus, L.

130. *T. terrestris*, L.
Railroad track near Muscatine and Fruitland. Infrequent.
Fruit greatly resembles common sand-burr.

RUTACEÆ.

Xanthoxylum, L.

131. *X. Americanum*, Mill. Prickly Ash.
Dry woods, especially along rivers; frequent.

Ptelea, L.

132. *P. trifoliata*, L. Hop-tree.
Dry soil, borders of woods, etc.; frequent.

SIMARUBACEÆ.**Ailanthus**, Desf.

133. *A. glandulosus*, Desf. Tree of Heaven.
Escaped to roadside near Oak Hill School, Buffalo T'w'p.,
Scott county.

CELASTRACEÆ.**Celastrus**, L.

134. *C. scandens*, L. Waxwork. Climbing Bitter-Sweet.
Woods; frequent.

Euonymus, Tourn.

135. *E. atropurpureus*, Jacq. Burning Bush. Wahoo.
Woods and sandy alluvial soil; infrequent.

RHAMNACEÆ.**Rhamnus**, Tourn.

136. *R. lanceolata*, Pursh.
Cedar River region; Princeton; infrequent.

Ceanothus, L.

137. *C. Americanus*, L. New Jersey Tea
Dry woodlands and prairies; common.

VITACEÆ.**Vitis**, Tourn. Grape.

138. *V. cinerea*, Engelm. Downy Grape.
Along the Mississippi River, and less frequent along the
Cedar.
139. *V. riparia*, Michx.
River bottoms and along streams; common. Frequent in
woods.

Ampelopsis, Michx.

140. *A. quinquefolia*, Michx. Virginian Creeper.
River banks and woods; common.

SAPINDACEÆ.**Æsculus**, L.

141. *A. glabra*, Willd. Ohio Buckeye.
One native tree in vicinity of Le Claire; formerly frequent.

Acer, Tourn.

- 142. *A. saccharinum*, Wang.
Hilly woods; infrequent.
- 143. *A. saccharinum*, Wang., var. *nigrum*, Torr. & Gray.
Wild Cat Den; Le Claire; infrequent.
- 144. *A. dasycarpum*, Ehrh.
River banks and low grounds; common.

Negundo, Moench.

- 145. *N. aceroides*, Moench.
Along streams; frequent.

Staphylea, L.

- 146. *S. trifolia*, L. Bladder-nut.
Hilly woodlands; not frequent.

ANACARDIACEÆ.**Rhus, L. Sumach.**

- 147. *R. glabra*, L.
Open woods and clearings; common.
- 148. *R. Toxicodendron*, L. Poison Oak.
River banks and woods; common.
- 149. *R. Canadensis*, Marsh.
Sand along Cedar and Wapsipinicon Rivers, and on Muscatine Island; frequent.

POLYGALACEÆ.**Polygala, Tourn. Milkwort.**

- 150. *P. Senega*, L. Seneca Snake-root.
Dry soil; frequent
- 151. *P. incarnata*, L.
Dry sandy soil, Lake T'w'p., Muscatine county; scarce.
- 152. *P. sanguinea*, L.
Sandy and moist ground; common.
- 153. *P. cruciata*, L.
Mossy borders of a pond, Lake T'w'p., Muscatine county;
scarce.
- 154. *P. verticillata*, L.
Dry hills; infrequent.

LEGUMINOSÆ.

Baptisia, Vent. False Indigo.

155. *B. leucophæa*, Nutt.
Prairies; less frequent than the next.
156. *B. leucantha*, Torr. & Gray.
Dry soil; frequent.

Crotalaria, L.

157. *C. sagittalis*, L. Rattle-box.
Sandy soil along rivers; not common.

Trifolium, Tourn. Clover.

158. *T. arvense*, L. Rabbit-foot Clover.
Sandy soil; Cedar River region, Muscatine Island, vicinity of Buffalo and Follets.
159. *T. pratense*, L. Red Clover.
Common.
160. *T. reflexum*, L. Buffalo Clover.
Sandy soil; Cedar River region, Muscatine Island, vicinity of Buffalo and Follets.
161. *T. repens*, L. White Clover.
Fields and waste places; common.
162. *T. hybridum*, L. Alsike.
Roadsides, etc.; becoming frequent.

Melilotus, Tourn. Melilot. Sweet Clover.

163. *M. officinalis*, Willd. Yellow M.
Roadsides and waste places; infrequent.
164. *M. alba*, Lam. White M.
Common in waste places.

Medicago, Tourn.

165. *M. sativa*, L. Alfalfa.
Along railroads; not common.

Amorpha, L.

166. *A. canescens*, Nutt. Lead-Plant.
Dry sterile soil; common.
167. *A. fruticosa*, L. False Indigo.
Along streams; frequent.

Petalostemon, Michx. Prairie Clover.

168. *P. violaceus*, Michx.
Dry prairies; rather common.
169. *P. candidus*, Michx.
Same habitat as that of the last species but less common.

Tephrosia, Pers.

170. *T. Virginiana*, Pers. Goat's Rue. Catgut.
Dry sterile soil; infrequent.

Robinia, L.

171. *R. Pseudacacia*, L. Locust.
Roadsides; frequent.

Astragalus, Tourn.

172. *A. Canadensis*, L.
Prairies; common.
173. *A. distortus*, Torr. & Gray.
Sandy soil of Cedar River region and Muscatine Island; not frequent.

Desmodium, Desv. Tick-Trefoil.

174. *D. nudiflorum*, DC.
Wooded hillsides at Wild Cat Den; scarce.
175. *D. acuminatum*, DC.
Rich woods; common.
176. *D. canescens*, DC.
Damp grounds; frequent.
177. *D. canescens*, var. *villosissimum*, Torr. & Gray.
Woodlands, Moscow. Near Follets along the Wapsipinicon River.
178. *D. cuspidatum*, Torr. & Gray.
Rich woods; infrequent.
179. *D. Illinoense*, Gray.
Prairies and dry sandy soil; infrequent.
180. *D. paniculatum*, DC.
Borders of woods; frequent.
181. *D. Canadense*, DC.
Borders of woods; common.

Lespedeza, Michx. Bush Clover.

182. *L. violacea*, Pers.
Dry soil, borders of woods and banks; frequent.
183. *L. reticulata*, Pers.
Dry sterile hillside at Wild Cat Den.
184. *L. capitata*, Michx.
Dry soil; common.
185. *L. capitata*, Michx., var. *longifolia*, Torr. & Gray.
Dry soil; frequent.

Vicia, Tourn. Vetch. Tare.

186. *V. sativa*, L.
Railroad track and adjacent waste grounds at Blue Grass.

Lathyrus, Tourn.

187. *L. palustris*, L.
Moist places; frequent.

Apios, Boerhave.

188. *A. tuberosa*, Moench. Ground-nut.
Climbing on bushes in low rich soil; infrequent.

Strophostyles, Ell.

189. *S. angulosa*, Ell.
River banks; common.
190. *S. pauciflorus*, Watson.
Cedar River region and Muscatine Island; frequent.

Amphicarpæa, Ell. Hog Pea-nut.

191. *A. monoica*, Nutt.
Rich damp woodlands; not common.
192. *A. Pitcheri*, Torr. & Gray.
Damp woods; frequent.

Cercis, L.

193. *C. Canadensis*, L. Red-bud.
Woods along Mississippi and Cedar Rivers; not uncommon.

Cassia, Tourn. Senna.

194. *C. Marilandica*, L.
Alluvial soil; frequent.
195. *C. Chamæcrista*, L. Partridge Pea.
Dry soil; common.

Gymnocladus, Lam.

196. *G. Canadensis*, Lam. Kentucky Coffee-tree.
Alluvial soil along the Mississippi River; not uncommon.

Gleditschia, L.

197. *G. triacanthos*, L. Honey-Locust.
Rich woods, especially along rivers; frequent.

ROSACEÆ.**Prunus, Tourn.**

198. *P. Americana*, Marshall. Wild Plum.
Woods; common.
199. *P. Chicasa*, Michx. Chickasaw Plum.
Muscatine Island, near the upper end of the "Big Timber;"
also on the Illinois side opposite this point.
200. *P. Virginiana*, L. Choke-Cherry.
Borders of woods and banks of streams; frequent.
201. *P. serotina*, Ehrh. Wild Black Cherry.
Woods; frequent.

Spiræa, L. Meadow-Sweet.

202. *S. salicifolia*, L.
Low grounds; rather common.
203. *S. lobata*, Jacq. Queen of the Prairie.
Moist prairies and boggy places of the Cedar River region;
infrequent.
204. *S. Aruncus*, L. Goat's-Beard.
Rich soil at Wild Cat Den and Wyoming Hill.

Physocarpus, Maxim.

205. *P. opulifolius*, Maxim. Nine-bark.
Moist places in hilly woods; not frequent.

Rubus, Tourn. Bramble.

206. *R. occidentalis*, L. Black Raspberry.
Fence-rows and open woods; common.
207. *R. villosus*, Ait. High Blackberry.
Borders of woods, open thickets, etc.; common.
208. *R. Canadensis*, L. Dewberry.
Dry fields and borders of woods; frequent.

209. *R. cuneifolius*, Pursh. Sand Blackberry.
Dry sterile hillside, Wild Cat Den.

Geum, L. Avens.

210. *G. album*, Gmelin.
Borders of woods; common.
211. *G. Virginianum*, L.
Low grounds; rather common.

Fragaria, Tourn. Strawberry.

212. *F. Virginiana*, Mill., var. *Illinoensis*, Gray.
Meadows, fence-rows, etc. Common.
213. *F. vesca*, L.
Rocky soil at Wild Cat Den. Our plant is *Fragaria Americana* (Porter) Britton.

Potentilla, L. Cinque-foil. Five-finger.

214. *P. arguta*, Pursh.
Dry soil; not common.
215. *P. Norvegica*, L.
Moist rich soil; common.
216. *P. rivalis*, Nutt., var. *pentandra*, Watson.
Sandy soil near Salisbury Bridge, Muscatine county. Davenport (A. S. Hitchcock in Cat. of *Anthophyta* and *Pteridophyta* of Ames, Iowa).
217. *P. Canadensis*, L.
Dry soil; common.

Agrimonia, Tourn. Agrimony.

218. *A. Eupatoria*, L.
Borders of woods; common.
219. *A. parviflora*, Ait.
Moist woods at Wild Cat Den. Along Cedar River.

Rosa, Tourn.

220. *R. blanda*, Ait.
Borders of woods and banks of streams; rather rare.
221. *R. Arkansana*, Porter.
Eroded hills and dry soils; common.
222. *R. rubiginosa*, L. Sweet-brier.
Escaped at Muscatine, Blue Grass, and Le Claire.

Pyrus, L.

223. *P. Ioensis*, Bailey.
Common in open woods. Typical *Pyrus coronaria*, L., has not yet been found within our limits.
224. *P. Americana*, DC. American Mountain Ash.
Three or four small trees in woods near Low's Run, Muscatine county.

Cratægus, L. Hawthorn.

225. *C. coccinea*, var. *flabellata*, (Spach), Britton.
Open woods; common. Often mistaken for the type.
226. *C. coccinea*, var. *macracantha*, Dudley.
Infrequent; Wyoming Hill.
227. *C. coccinea*, var. *mollis*, Torr. & Gray.
Open woods; common. Our species of this genus are all found in open woods and thickets.
228. *C. tomentosa*, L.
Infrequent.
229. *C. punctata*, Jacq.
Walnut Grove, Scott county; Muscatine.
230. *C. crus-galli*, L.
Frequent. On May 15, 1895, four species of *Cratægus* were observed in the woods at Walnut Grove, Scott county. *C. coccinea*, var. *mollis*, had small haws already formed; var. *flabellata* had lost all but a few petals, *C. crus-galli* was in full bloom and *C. tomentosa* had begun to show white in the bud. *C. punctata* blooms with *C. tomentosa*. This sequence of inflorescence appears constant, the intervals between succeeding species being about a week.

Amelanchier, Medic.

231. *A. Canadensis*, Torr. & Gray. Service-berry.
Woodlands of Muscatine county; frequent.

SAXIFRAGACEÆ.**Saxifraga, L.**

232. *S. Pennsylvanica*, L. Saxifrage.
Low wet places; common.

Mitella, Tourn.

233. *M. diphylla*, L. Bishop's Cap.
Rich wooded hillsides; infrequent.

Heuchera, L.

234. *H. hispida*, Pursh. Alum-root.
Dry soil ; common.

Parnassia, Tourn.

235. *P. Caroliniana*, Michx. Grass of Parnassus.
Boggy places in the Cedar River region. Wet meadows at Eldridge.

Ribes, L. Currant. Gooseberry.

236. *R. Cynosbati*, L.
Woods ; less frequent than the next.
237. *R. gracile*, Michx. Missouri Gooseberry.
Woods ; frequent.
238. *R. floridum*, L'Her. Wild Black Currant.
Rich woods ; frequent.
239. *R. aureum*, Pursh. Buffalo Currant.
Escaped to roadside near Blue Grass.

CRASSULACEÆ.**Penthorum, Gronov.**

240. *P. sedoides*, L. Ditch Stone-crop.
Ditches and other wet places ; common.

Sedum, Tourn. Stone-crop. Orpine.

241. *S. telephioides*, Michx.
Near old dwellings and cemeteries.
242. *S. Telephium*, L. Live-for-ever.
Habitat same as that of the last ; less frequent.

HALORAGÆ.**Myriophyllum, Vaill. Water Milfoil.**

243. *M. spicatum*, L.
Pond near Salisbury Bridge in the Cedar River region, growing in water three or four feet deep.
244. *M. scabratum*, Michx.
Shallow ponds on Muscatine Island, Muscatine county ; not infrequent.

Proserpinaca, L.

245. *P. palustris*, L. Mermaid-weed.
Borders of ponds along Cedar River ; not common.

Callitriche, L.

246. *C. verna*, L. Water Starwort.

Stagnant slough near Cedar River in the vicinity of Salisbury Bridge.

MELASTOMACEÆ.**Rhexia, L.**

247. *R. Virginica*, L. Meadow Beauty.

In a wet depression on the sand hills of Cedar River, Lake T'w'p., Muscatine county; rare.

LYTHRACEÆ.**Didiplis, Raf.**

248. *D. linearis*, Raf. Water Purslane.

Bottom of shallow pond near Noels.

Rotala, L.

249. *R. ramosior*, Koehne.

Borders of ponds; frequent.

Ammania, Houston.

250. *A. coccinea*, Rottb.

Low wet ground; frequent.

Lythrum, L.

251. *L. alatum*, Pursh. Loosestrife.

Low wet grounds; common.

ONAGRACEÆ.**Ludwigia, L.**

252. *L. alternifolia*, L. Seed-box.

Borders of ponds; infrequent.

253. *L. polycarpa*, Short & Peter.

Ditches; frequent.

254. *L. palustris*, Ell.

In mud and water of shallow ponds, etc.; frequent.

Epilobium, L.

255. *E. coloratum*, Muhl. Willow-herb.

Wet grounds; common.

Oenothera, L. Evening Primrose.

256. *O. biennis*, L.

Fields and waste places; common.

257. *Æ. biennis*, L., var. *grandiflora*, Lindl.
Roadsides and waste places ; infrequent.
258. *Æ. rhombipetala*, Nutt.
Sandy soil along Cedar and Wapsipinicon Rivers ; common.
259. *Æ. sinuata*, L.
Near the Rolling Mills, Muscatine.
260. *Æ. fruticosa*, L. Sundrops.
Sandy soil of the Cedar River region ; Eldridge. Rare.

Gaura, L.

261. *G. biennis*, L.
River banks and waste places ; common.
262. *G. parviflora*, Dougl.
Front Street, Muscatine.

Circæa, Tourn. Enchanter's Nightshade.

263. *C. Lutetiana*, L.
Rich woods ; common.
264. *C. alpina*, L.
In springy soil under cool dripping rocks at Wild Cat Den.
Rare.

CUCURBITACEÆ.**Sicyos**, L.

265. *S. angulatus*, L. One-seeded Burr Cucumber.
River banks ; common.

Echinocystis, Torr. & Gray.

266. *E. lobata*, Torr. & Gray.
River banks ; common.

Cucurbita, L.

267. *C. fetidissima*, HBK.
Railroad track near Muscatine ; one plant in 1898.

CACTACEÆ.**Opuntia**, Tourn.

268. *O. Rafinesquii*, Engelm. Prickly Pear.
Sandy soil along Cedar River in the vicinity of Moscow and
the B. C. R. & N. Railroad Bridge ; infrequent.

FICOIDEÆ.**Mollugo**, L.

269. *M. verticillata*, L. Carpet-weed
Sandy river banks and waste places ; common.

UMBELLIFERÆ.

Daucus, Tourn.

270. **D. Carota**, L. Carrot.
Roadsides; infrequent.

Angelica, L.

271. *A. atropurpurea*, L.
Moist hillside near Low's Run, Muscatine Co. (Mackenzie).

Tiedemannia, DC.

272. *T. rigida*, Coult & Rose. Cowbane.
Swampy ground; infrequent.

Pastinaca, L.

273. **P. sativa**, L.
Waste places; common.

Polytænia, DC.

274. *P. Nuttallii*, DC.
Dry sterile soil; not frequent.

Fœniculum, Adans.

275. **F. officinale**, All. Fennel.
Marshy ground in West Davenport.

Pimpinella, L.

276. *P. integerrima*, Benth. & Hook.
Rocky hillsides, West Davenport; McCausland; Wilton
branch of the C. R. I. & P. near Muscatine.

Cryptotænia, DC.

277. *C. Canadensis*, DC.
Moist woods; infrequent.

Sium, Tourn.

278. *S. cicutæfolium*, Gmelin.
Swampy places; frequent.

Zizia, Koch.

279. *Z. aurea*, Koch.
Prairies; frequent. Blooms in April and May.

Cicuta, L. Water Hemlock.

280. *C. maculata*, L.
Sloughs; common.
281. *C. bulbifera*, L.
McCloud's Spring, near Bayfield, Muscatine county.

Leptocaulis, Nutt.

- 282.
- L. patens*
- , Nutt.

Sandy railroad embankment near Montpelier.

Chærophyllum, L.

- 283.
- C. procumbens*
- , Crantz.

Moscow; infrequent.

Osmorrhiza, Raf. Sweet Cicely.

- 284.
- O. brevistylis*
- , DC.

Rich woods; common.

- 285.
- O. longistylis*
- , DC.

With the preceding species.

Eryngium, Tourn.

- 286.
- E. yuccaæfolium*
- , Michx. Rattlesnake Master.

Prairies; common.

Sanicula, Tourn.

- 287.
- S. Marilandica*
- , L. Black Snakeroot.

Woods; common.

ARALIACEÆ.**Aralia**, Tourn.

- 288.
- A. racemosa*
- , L. Spikenard.

Rich woodlands; infrequent.

- 289.
- A. nudicaulis*
- , L. Wild Sarsaparilla.

Moist rich woods at Wild Cat Den.

- 290.
- A. quinquefolia*
- , Descne. & Planch. Ginseng.

Rich woods; infrequent.

CORNACEÆ.**Cornus**, Tourn. Cornel. Dogwood.

- 291.
- C. circinata*
- , L'Her.

Rocky woods along Sweetland Creek (Mackenzie).

- 292.
- C. sericea*
- , L. Kinnikinnik.

Wet places; not frequent.

- 293.
- C. asperifolia*
- , Michx.

Dry soil; frequent.

- 294.
- C. stolonifera*
- , Michx. Red-Osier Dogwood.

Wet places; infrequent.

295. *C. paniculata*, L'Her.
Open woods ; common.
296. *C. alternifolia*, L. f.
Woods ; infrequent.

CAPRIFOLIACEÆ.

Sambucus, Tourn.

297. *S. Canadensis*, L. Elder.
Open woods ; frequent.

Viburnum, L.

298. *V. Lentago*, L. Sheep-berry.
Woods and banks of streams ; infrequent.

Triosteum, L.

299. *T. perfoliatum*, L. Fever-wort. Horse Gentian.
Woods ; frequent.

Symphoricarpus, Dill.

300. *S. vulgaris*, Michx. Coral-berry.
Dry bank on border of woods above Muscatine ; infrequent.

Lonicera, L.

301. *L. glauca*, Hill.
Woods ; infrequent.

Diervilla, Tourn.

302. *D. trifida*, Moench.
Woods ; infrequent.

RUBIACEÆ.

Houstonia, L.

303. *H. minima*, Beck.
Dry sandy soil along Cedar and Wapsipinicon Rivers ; Camp
McClellan, near Davenport. Very abundant locally.

Cephalanthus, L.

304. *C. occidentalis*, L. Button-bush.
Swampy grounds and river banks.

Galium, L. Bedstraw. Cleavers.

305. *C. Aparine*, L.
Moist woods ; frequent.
306. *G. circæans*, Michx.
Rich woods ; not common.

307. *G. trifidum*, L., var. *latifolium*, Torr.
Low wet grounds; common.
308. *G. asprellum*, Michx.
Woods; common.
309. *G. triflorum*, Michx.
Moist woods; not common.

VALERIANACEÆ.

Valeriana, Tourn.

310. *V. edulis*, Nutt. Valerian.
Wet prairies near Maysville and Eldridge; rare.

COMPOSITÆ.

Vernonia, Schreb. Iron-weed.

311. *V. fasciculata*, Michx.
Low grounds; common. In Lake T'w'p., Muscatine county,
there is a white-flowered form of this species.
312. *V. altissima*, Nutt., var. *grandiflora*, Nutt.
Near Davenport; rare.

Eupatorium, Tourn. Thoroughwort.

313. *E. purpureum*, L. Joe-Pye Weed.
Low grounds; frequent.
314. *E. serotinum*, Michx.
Low grounds; common.
315. *E. altissimum*, L.
Dry soil; infrequent.
316. *E. perfoliatum*, L. Boneset.
Low grounds; common.
317. *E. ageratoides*, L. White Snake-root.
Rich woods; common.

Kuhnia, L.

318. *K. eupatorioides*, L.
Dry soil; common.

Liatris, Schreb. Blazing Star.

319. *L. cylindracea*, Michx.
Sandy prairies; infrequent.
320. *L. scariosa*, Willd.
Dry soil; common.

321. *L. pycnostachya*, Michx.

Dry soil ; common.

Grindelia, Willd.

322. *G. squarrosa*, Dunal.

Railroad tracks, Fruitland, 1894 ; Wilton, 1895. Evidently of recent introduction.

Chrysopsis, Nutt.

323. *C. villosa*, Nutt. Golden Aster.

Sandy soil near Wapsipinicon River.

Solidago, L. Golden-rod.

324. *S. latifolia*, L.

Moist wooded hillsides ; frequent.

325. *S. speciosa*, Nutt.

Dry soils, borders of woods and along railroads ; frequent.

326. *S. speciosa*, Nutt., var. *angustata*, Torr. & Gray.

West Davenport ; Muscatine.

327. *S. patula*, Muhl.

Boggy places along Cedar River ; infrequent.

328. *S. ulmifolia*, Muhl.

Hilly woodlands ; frequent.

329. *S. Missouriensis*, Nutt.

Dry prairies ; frequent. Our earliest goldenrod.

330. *S. serotina*, Ait.

Open woods and dry banks ; frequent.

331. *S. serotina*, Ait., var. *gigantea*, Gray.

Not frequent.

332. *S. Canadensis*, L.

Borders of woods and fence-rows ; common.

333. *S. nemoralis*, Ait.

Dry sterile soil ; frequent.

334. *S. rigida*, L.

Prairies and dry banks ; frequent.

335. *S. Riddellii*, Frank.

Wet prairies, Cedar River region ; Eldridge.

336. *S. lanceolata*, L.

Low grounds ; common.

Boltonia, L'Her.

337. *B. asteroides*, L'Her.
Low wet places ; abundant locally.

Aster, L.

338. *A. corymbosus*, Ait.
Woods ; infrequent.
339. *A. macrophyllus*, L.
Moist woodlands ; not infrequent.
340. *A. oblongifolius*, Nutt., var. *rigidulus*, Gray.
Dry sandy soil ; Cedar River region, Muscatine Island, and
Wyoming Hill ; Mississippi River near Camp McClellan.
341. *A. Novae Angliæ*, L.
Moist grounds ; common. An albino of this species is fre-
quent along several miles of roadside near Fairport.
342. *A. Novae Angliæ*, L., var. *roseus*, Gray.
Infrequent.
343. *A. sericeus*, Vent.
Dry sandy soil ; frequent.
344. *A. azureus*, Lindl.
Prairies ; frequent.
345. *A. Shortii*, Hook.
Dry banks and borders of woods ; frequent.
346. *A. cordifolius*, L.
Hilly woods, T'w'p. Seventy-six, Muscatine county. Not
common. Frequent at Drury's Landing, Ill., just outside
of our limits.
347. *A. sagittifolius*, Willd.
Open woods ; common.
348. *A. Drummondii*, Lindl.
Open woods ; frequent. When not growing with *A. sagitti-
folius*, quite distinct, frequently four or five feet high and
of more vigorous growth than that species.
349. *A. laevis*, L.
Dry prairies ; frequent.
350. *A. ericoides*, L.
Dry soil ; frequent.
351. *A. ericoides*, L., var. *villosus*, Torr. & Gray.
Rocky banks of the Mississippi ; frequent.

352. *A. amethystinus*, Nutt.
Roadsides, Blue Grass ; rare.
353. *A. multiflorus*, Ait.
Dry soil in waste places ; common.
354. *A. vimineus*, Lam.
Damp, open grounds ; frequent.
355. *A. diffusus*, Ait.
Open woods and thickets ; frequent.
356. *A. diffusus*, Ait., var. *thyrsoides*, Gray.
Roadsides ; infrequent.
357. *A. diffusus*, Ait., var. *bifrons*, Gray.
Low grounds and shady places ; frequent.
358. *A. diffusus*, Ait., var. *hirsuticaulis*, Gray.
Roadsides ; common. This Aster seems to be midway between the varieties *hirsuticaulis*, Gray, and *pendulus* (Ait.) Burgess.—*E. J. Hill*
359. *A. Tradescanti*, L.
Frequent in low grounds.
360. *A. paniculatus*, Lam.
Common.
361. *A. paniculatus*, Lam., var. *bellidiflorus*, Britton.
Damp soil ; frequent.
362. *A. salicifolius*, Ait.
Open woods ; frequent.
363. *A. salicifolius*, Ait., var. *subasper*, Gray.
Blue Grass.
364. *A. prenanthoides*, Muhl.
Damp woods at Wild Cat Den.
365. *A. puniceus*, L.
Damp places ; common.
366. *A. puniceus*, L., var. *lucidulus*, Gray.
With the type ; infrequent.
367. *A. umbellatus*, Mill.
Moist ground, Allen's Grove and Cedar River region.
368. *A. linariifolius*, L.
Dry sandy soil, Bay field.

369. *A. ptarmicoides*, Torr. & Gray.
Dry sandy prairie, Bayfield.

Erigeron, L. Fleabane.

370. *E. Canadensis*, L. Butter-weed.
Waste grounds ; common.
371. *E. divaricatus*, Michx.
Dry sandy soil, Cedar River region ; frequent. Becoming a
troublesome weed in pastures in Scott county.
372. *E. annuus*, Pers. Daisy Fleabane.
Fields and waste places ; frequent.
373. *E. strigosus*, Muhl.
Similar places ; common.
374. *E. bellidifolius*, Muhl.
Woods ; frequent.
375. *E. Philadelphicus*, L.
Moist ground ; frequent.

Antennaria, Gaertn.

376. *A. plantaginifolia*, Hook. Plantain-leaved Everlasting.
Dry sterile soil ; common.

Gnaphalium, L.

377. *G. polycephalum*, Michx.
Dry fields and open woods ; frequent.

Polymnia, L.

378. *P. Canariensis*, L., var. *radiata*, Gray. Leaf Cup.
Open rich woods along Cedar River ; not infrequent.

Silphium, L. Rosin-weed.

379. *S. laciniatum*, L. Compass Plant.
Prairies ; common.
380. *S. integrifolium*, Michx.
Prairies ; common.
381. *S. perfoliatum*, L. Cup Plant.
Low grounds ; frequent.

Parthenium, L.

382. *P. integrifolium*, L.
Dry sandy soil ; infrequent.

Iva, L.

383. *I. xanthiifolia*, Nutt.
Dry waste grounds, Muscatine, Davenport.

Ambrosia, Tourn. Ragweed.

384. *A. trifida*, L.
Fields and waste places ; common.
385. *A. trifida*, L., var. *integrifolia*, Torr. & Gray.
Frequent.
386. *A. artemisiæfolia*, L.
Fields and waste places ; common.
387. *A. psilostachya*, DC.
Dry sandy soil ; abundant locally.

Xanthium, Tourn. Cocklebur.

388. *X. strumarium*, L.
River banks, West Davenport ; frequent.
389. *X. Canadense*, Mill.
Fields and waste places ; common. Abundant along rivers.
390. *X. Canadense*, Mill, var. *echinatum*, Gray.
River bank at West Davenport, Rockingham, and Muscatine ; infrequent.

Eclipta, L.

391. *E. alba*, Hassk.
River banks ; common.

Heliopsis, Pers.

392. *H. lævis*, Pers.
Roadsides ; infrequent in Scott ; frequent in Muscatine.
393. *H. scabra*, Dunal.
Roadsides and waste places ; common.

Echinacea, Moench.

394. *E. purpurea*, Moench.
Collected in Louisa county, just outside our limits, in 1891.
395. *E. angustifolia*, DC.
Dry prairies ; common.

Rudbeckia, L. Cone-flower.

396. *R. laciniata*, L.
Along streams ; rather common.
397. *R. triloba*, L.
Dry soil ; frequent.
398. *R. subtomentosa*, Pursch.
Low prairies ; frequent.

399. *R. hirta*, L.
Dry soil ; common.

Lepachys, Raf.

400. *L. pinnata*, Torr. & Gray.
Prairies and dry banks ; common.
401. *L. columnaris*, Torr. & Gray.
Railroad track, Blue Grass, 1896 ; Muscatine ; infrequent.

Helianthus, L.

402. *H. annuus*, L.
Railroad tracks and waste places ; frequent.
403. *H. petiolaris*, Nutt.
Frequent along railroad track from Fruitland to Montpelier.
404. *H. rigidus*, Desf.
Dry grounds ; common.
405. *H. latiflorus*, Pers.
Dry open places ; frequent.
406. *H. occidentalis*, Riddell.
Dry sterile soil ; frequent.
407. *H. mollis*, Lam.
Waste ground near railroad track, Muscatine.
408. *H. grosse-serratus*, Martens.
Low grounds and roadsides ; common.
409. *H. giganteus*, L.
Open woodlands, Muscatine, Pine Mill, Moscow.
410. *H. strumosus*, L.
Borders of woods.
411. *H. strumosus*, L., var. *mollis*, Torr. & Gray.
Fence rows, etc. ; frequent.
412. *H. tracheliofolius*, Willd.
Borders of woods in sandy soil ; infrequent.
413. *H. decapetalus*, L.
Frequent.
414. *H. tuberosus*, L. Jerusalem Artichoke.
Dry grounds and fence rows ; common.
415. *H. tuberosus*, L., var. *subcanescens*, Gray.
Dry soil, Blue Grass, Cedar River region.

Actinomeris, Nutt.

- 416.
- A. squarrosa*
- , Nutt.

Borders of woods, Muscatine county; infrequent. Near Davenport.

Coreopsis, L. Tickseed.

- 417.
- C. tinctoria*
- , Nutt.

Escaped from cultivation near Fruitland. (Mackenzie.)

- 418.
- C. palmata*
- , Nutt.

Dry hillsides and prairies; common.

- 419.
- C. tripteris*
- , L. Tall Coreopsis.

Frequent in vicinity of Cedar River; infrequent elsewhere.

- 420.
- C. trichosperma*
- , Michx. Tickseed Sunflower.

Low grounds; wet meadows; frequent.

- 421.
- C. trichosperma*
- , Michx., var.
- tenuiloba*
- .

Maysville, Scott county, 1896.

- 422.
- C. aristosa*
- , Michx., var.
- mutica*
- .

Low grounds near Wilton and Atalissa.

- 423.
- C. involucrata*
- , Nutt.

Low grounds near Walcott.

- 424.
- C. discoidea*
- , Torr. & Gray.

In low wet ground, West Davenport.

Bidens, L. Burr Marigold.

- 425.
- B. frondosa*
- , L.

Moist waste places; very common.

- 426.
- B. connata*
- , Muhl.

Infrequent in swampy grounds, West Davenport.

- 427.
- B. connata*
- , Muhl., var.
- comosa*
- , Gray.

Moist waste places; common.

- 428.
- B. cernua*
- , L.

Low wet grounds; frequent.

Galinsoga, Ruiz & Pavon.

- 429.
- G. parviflora*
- , Cav.

Streets of Northwest Davenport near Fair Grounds. Abundant over a limited area.

Helenium, L.

- 430.
- H. autumnale*
- , L.

River banks and low ground; common.

Dysodia, Cav.

431. *D. chrysanthemoides*, Lag.
Dry sterile soil; frequent.

Anthemis, L. Chamomile.

432. *A. Cotula*, DC. Dog Fennel. Mayweed.
Roadsides and waste grounds; common.
433. *A. arvensis*, L. Corn Chamomile.
Waste ground, Muscatine; infrequent.

Achillæa, L.

434. *A. Millefolium*, L. Yarrow.
Fields, etc.; common. The rose-colored form is infrequent.

Chrysanthemum, Tourn.

435. *C. Leucanthemum*, L. Ox-eye Daisy.
Railroad tracks at West Davenport, Blue Grass, and Muscatine Island.

Tanacetum, L.

436. *T. vulgare*, L.
Roadsides near old gardens; frequent.

Artemisia, L. Wormwood.

437. *A. caudata*, Michx.
Dry sandy soil, Cedar River region; common.
438. *A. dracunculoides*, Pursh.
Dry soil; infrequent.
439. *A. Abrotinum*, L.
Near old gardens; not frequent.
440. *A. serrata*, Nutt.
Sandy banks of streams, etc.; frequent.
441. *A. Ludoviciana*, Nutt.
Dry ground; common.
442. *A. biennis*, Willd.
Waste grounds; common.
443. *A. annua*, L.
Streets and waste grounds of Davenport and Muscatine.

Senecio, Tourn.

444. *S. aureus*, L. Golden Ragwort.
Boggy place at Wild Cat Den; rare.
445. *S. aureus*, L., var. *Balsamita*, Torr. & Gray.
Dry prairies; common.

Cacalia, L. Indian Plantain.

446. *C. suaveolens*, L.
Banks of creeks along Cedar River ; infrequent.
447. *C. reniformis*, Muhl.
Wild Cat Den ; Cedar T'w'p.; rare.
448. *C. atriplicifolia*, L.
Borders of woods ; frequent.
449. *C. tuberosa*, Nutt.
Wet prairies ; common.

Erechtites, Raf.

450. *E. hieracifolia*, Raf. Fireweed.
Moist woods and waste places ; common.

Arctium, L. Burdock.

451. **A. Lappa**, L.
Waste places ; common.
452. **A. Lappa**, L., var. **majus**, Gray.
Eldridge ; apparently rare.

Cnicus, Tourn.

453. **C. lanceolatus**, Hoffm.
Pastures and waste places ; common.
454. *C. undulatus*, Gray.
Railroad track near Montpelier ; a single plant.
455. *C. altissimus*, Willd.
Fields and open woods ; infrequent.
456. *C. altissimus*, Willd., var. *discolor*, Gray.
Common.
457. *C. Hillii*, Canby. Garden and Forest, March 4, 1891
Dry prairies, pastures and open woodlands ; infrequent. Although found in various localities within our limits, it seems to be most frequent in dry sandy soil along Cedar and Wapsipinicon Rivers. See plate and description.
458. **C. arvensis**, Hoffm. Canada Thistle.
Muscatine, Mosccw, Valley City ; rare.

Krigia, Schreber.

459. *K. amplexicaulis*, Nutt.
Rich woods ; infrequent.

Cichorium, Tourn. Chicory.

460. **C. Intybus**, L.
Roadsides ; frequent.

Hieracium, Tourn. Hawkweed.

461. *H. Canadense*, Michx.
Dry wooded hillsides ; infrequent.
462. *H. scabrum*, Michx.
Dry woodlands ; infrequent.
463. *H. longipilum*, Torr.
Sandy prairie near Bayfield Station ; not frequent.

Prenanthes, Vaill. Rattlesnake Root.

464. *P. racemosa*, Michx.
Prairies and along railroads ; frequent.
465. *P. aspera*, Michx.
Prairies, etc. ; frequent.
466. *P. alba*, L.
Borders of woods ; infrequent.

Troximon, Nutt.

467. *T. cuspidatum*, Pursh.
Dry prairie near Blue Grass. Lake T'w'p., near Cedar River,
May, 1893. (Mackenzie.)

Taraxacum, Haller.

468. *T. officinale*, Weber. Dandelion.
Fields, etc. ; common.

Lactuca, Tourn. Lettuce.

469. *L. Scariola*, L. Prickly Lettuce.
Railroad tracks and waste places ; becoming common.
470. *L. Canadensis*, L.
Rich soil ; common.
471. *L. Ludoviciana*, DC.
Rich soil ; infrequent.
472. *L. Floridana*, Gaertn.
Borders of woods ; frequent.
473. *L. leucophæa*, Gray.
Borders of woods in rich soil, Dixon, Blue Grass, Davenport,
Pine Creek.

Sonchus, L. Sow Thistle.

474. *S. oleraceus*, L.
Waste places ; common.
475. *S. asper*, Vill.
With the last species ; infrequent.

LOBELIACEÆ.**Lobelia, L.**

476. *L. cardinalis*, L. Cardinal Flower.
Low grounds along rivers; frequent.
477. *L. syphilitica*, L.
Low grounds, common. White-flowered forms are occasionally met with.
478. *L. spicata*, Lam.
Prairies; infrequent.
479. *L. inflata*, L. Indian Tobacco.
Dry woods; common.

CAMPANULACEÆ.**Specularia, Heister.**

480. *S. perfoliata*, A. DC. Venus's Looking-glass.
Dry banks and fields; frequent.

Campanula, Tourn. Bellflower.

481. *C. aparinoides*, Pursh.
Moist grounds; frequent in Muscatine county.
482. *C. Americana*, L.
Moist open woods; frequent.

ERICACEÆ.**Gaylussacia, HBK.**

483. *G. resinosa*, Torr. & Gray. Black Huckleberry.
Dry sterile soil at Wild Cat Den and along Duck Creek.

Pyrola, Tourn. Shinleaf.

484. *P. elliptica*, Nutt.
Hillsides, Allen's Grove; Lake T'w'p., near Cedar River;
Seventy-six T'w'p.; infrequent.

Monotropa, L.

485. *M. uniflora*, L. Indian Pipe. Corpse Plant.
Rich woods, Wyoming Hill, 1878; Allen's Grove, 1892;
near Cedar River, 1895 (Witter); rare.

PRIMULACEÆ.**Dodecatheon, L.**

486. *D. Meadia*, L. Shooting Star.
Prairies; common.

Androsace, Tourn.

487. *A. occidentalis*, Pursh.

Dry sterile soil along Cedar and Wapsipinicon Rivers; Camp McClellan. Abundant locally.

Steironema, Raf.

488. *S. ciliatum*, Raf.

Low grounds; common.

489. *S. lanceolatum*, Gray.

Low grounds; frequent.

490. *S. longifolium*, Gray.

Moist prairies; common.

Lysimachia, Tourn. Loosestrife.

491. *L. stricta*, Ait.

Low grounds at Montpelier, Noels, and Muscatine. Now rare or extinct.

492. *L. nummularia*, L. Moneywort.

Sparingly escaped from cultivation; Muscatine, Le Claire.

493. *L. thyrsiflora*, L.

Swampy grounds, Moscow, Muscatine Island, Eldridge.

Probably extinct in these localities. Islands opposite Montpelier and bank of river near Buffalo; frequent.

OLEACEÆ.**Fraxinus**, Tourn. Ash.

494. *F. Americana*, L. White Ash.

River banks and woods; frequent.

495. *F. pubescens*, Lam. Red Ash.

River banks; infrequent.

496. *F. viridis*, Michx. f. Green Ash.

River banks; common.

497. *F. sambucifolia*, Lam. Black Ash.

Jamestown, Blue Grass, Wild Cat Der, Cedar T'w'p.; infrequent.

APOCYNACEÆ.**Apocynum**, Tourn. Dogbane

498. *A. androsæmifolium*, L.

Borders of woods; infrequent.

499. *A. cannabinum*, L.
Moist or dry soil ; frequent.

ASCLEPIADACEÆ.

Asclepias, L. Milkweed. Silkweed.

500. *A. tuberosa*, L. Butterfly-weed. Pleurisy-root.
Dry prairies ; common.
501. *A. purpurascens*, L.
Along railroads ; not common. Dry hillside near Wild Cat Den.
502. *A. incarnata*, L.
Low wet grounds ; common.
503. *A. Cornuti*, Decaisne.
Fields and waste places ; common.
504. *A. Sullivantii*, Engelm.
Prairies ; infrequent.
505. *A. obtusifolia*, Michx.
Sandy soil ; frequent.
506. *A. phytolaccoides*, Pursh.
Moist woods of Muscatine county ; not rare.
507. *A. quadrifolia*, L.
Dry woods ; rare. Wild Cat Den, Weed's Woods, and T'w'p.
Seventy-six of Muscatine county.
508. *A. verticillata*, L.
Dry prairies ; common.

Acerates, Ell. Green Milkweed.

509. *A. longifolia*, Ell.
Prairies and roadsides ; common.
510. *A. viridiflora*, Ell.
Dry prairies ; common.

GENTIANACEÆ.

Gentiana, Tourn. Gentian.

511. *G. crinita*, Froel.
Boggy ravine, Lake T'w'p., and Cedar River region in Muscatine county.

512. *G. quinqueflora*, Lam., var. *occidentalis*, Gray.
Moist hillsides; frequent.
513. *G. puberula*, Michx.
Prairies and barren places; not rare. Muscatine county.
514. *G. Andrewsii*, Griseb. Closed G.
Low places; infrequent.
515. *G. alba*, Muhl.
Moist wooded banks and copses; frequent. Muscatine Co.

POLEMONIACEÆ.

Phlox, L.

516. *P. paniculata*, L.
Established near old gardens in Scott county.
517. *P. maculata*, L. Wild Sweet William.
Railroad tracks; infrequent. Eldridge, Noels. Abundant
near Allen's Grove, where an albino occurs.
518. *P. pilosa*, L.
Prairies and dry open woods; common.
519. *P. divaricata*, L.
Woods; common.
520. *P. bifida*, Beck.
Sandy open woods along Cedar River near Moscow, Muscatine county; local.

Polemonium, Tourn.

521. *P. reptans*, L. Greek Valerian.
Woods; frequent.

HYDROPHYLLACEÆ.

Hydrophyllum, Tourn.

522. *H. Virginicum*, L.
Rich woods; frequent.
523. *H. appendiculatum*, Michx.
Damp rich woods near streams; infrequent. Muscatine Co.

Ellisia, L.

524. *E. Nyctelea*, L.
Moist woods; frequent.

BORRAGINACEÆ.**Cynoglossum**, Tourn.

525. **C. officinale**, L. Hound's Tongue.
Dry soil ; rather infrequent.

Echinospermum, Lehm. Stickseed.

526. *E. Virginicum*, Lehm. Beggar's Lice.
Open woods ; common.
527. **E. Lappula**, Lehm.
Dry soil ; infrequent. Abundant in the streets of Le Claire
and in Camp McClellan.

Mertensia, Roth.

528. *M. Virginica*, DC. Blue Bells.
Rich woods ; frequent.

Myosotis, Dill. Forget-me-not.

529. *M. verna*, Nutt.
Sandy soil along Wapsipinicon and Cedar Rivers ; infrequent.

Lithospermum, Tourn. Puccoon.

530. **L. arvense**, L.
On railroad near Fairport.
531. *L. hirtum*, Lehm.
Dry sandy hills ; infrequent. Cedar and Wapsipinicon River
regions.
532. *L. canescens*, Lehm.
Prairies ; common.
533. *L. angustifolium*, Michx.
Dry sandy hills ; infrequent. River regions of Cedar and
Wapsipinicon, with *L. hirtum*. Rocky banks of Missis-
sippi near Camp McClellan.

Onosmodium, Michx.

534. *O. Carolinianum*, DC., var. *molle*, Gray.
Sandy ground ; infrequent.

CONVOLVULACEÆ.**Ipomœa**, L. Morning Glory.

535. *I. coccinea*, L.
Spontaneous near an old garden, Blue Grass, Scott county.

536. **I. hederacea**, Jacq.
River bank near Buffalo, Scott county.
537. **I. purpurea**, Lam. Common M.
Frequently escaping from old gardens.
538. **I. pandurata**, Meyer. Man-of-the-Earth.
Eroded hills and dry river banks; infrequent.
539. **I. lacunosa**, L.
Islands and banks of the Mississippi; frequent.

Convolvulus, Tourn. Bindweed.

540. **C. spithameus**, L.
Dry soil, Jamestown, Wild Cat Den, Low's Run; rare.
541. **C. sepium**, L.
Cultivated and waste grounds; common.
542. **C. sepium**, L., var. *repens*, Gray.
Devil's Glen, Scott county; rare.
543. **C. arvensis**, L.
Cultivated and waste grounds; becoming as troublesome in some localities as *C. sepium*.

Breweria, R. B.

544. **B. Pickeringii**, Gray.
Sandy soil along railroad at Fruitland; local.

Cuscuta, Tourn. Dodder.

545. **C. chlorocarpa**, Engelm.
Low grounds along streams; common. Often growing on *Xanthium* and low willows.
546. **C. tenuiflora**, Engelm.
On willows, *Compositæ*, and *Cephalanthus*; frequent.
547. **C. inflexa**, Engelm.
On *Compositæ* and hazel; infrequent.
548. **C. Gronovii**, Willd.
Low grounds; infrequent. On *Compositæ*.
549. **C. cuspidata**, Engelm.
Sandy prairies near Fruitland. On Ambrosia, Erigeron, and Verbena, Sept., 1895, Sept., 1898.
550. **C. glomerata**, Choisy.
Low grounds; frequent. On tall *Compositæ*.

SOLANACEÆ.**Solanum**, Tourn. Nightshade.

551. **S. Dulcamara**, L. Bittersweet.
Waste places near old dwellings ; infrequent.
552. **S. nigrum**, L.
Shaded grounds ; common.
553. **S. Carolinense**, L. Horse Nettle.
Dry sandy soil ; frequent.
554. **S. rostratum**, Dunal.
Becoming frequent along railroad tracks. The first plants
within our limits were found in 1891.

Physalis, L. Ground Cherry.

555. **P. Philadelphica**, Lam.
Along river banks and railroad tracks ; infrequent.
556. **P. pubescens**, L.
Rich soil ; common.
557. **P. lanceolata**, Michx.
Railroads and waste places ; common.

Nicandra, Adans.

558. **N. physaloides**, Gaertn. Apple of Peru.
Escaped into a field near Muscatine, 1896.

Lycium, L.

559. **L. vulgare**, Dunal. Matrimony Vine.
Near old gardens ; common.

Datura, D. Jamestown Weed. "Jimsonweed."

560. **D. Stamonium**, L.
Waste places ; common in Muscatine county ; infrequent in
Scott county.
561. **D. Tatula**, L.
Waste places ; common in both counties.

SCROPHULARIACEÆ.**Verbascum**, L. Mullein.

562. **V. Thapsus**, L. Common Mullein.
Waste places ; common.
563. **V. Blattaria**, L. Moth Mullein.
Woodland pastures, Muscatine county ; infrequent.

Linaria, Tourn.

564. *L. vulgaris*, Mill. Butter and Eggs.
Roadsides and railroad tracks ; frequent.

Scrophularia, Tourn. Figwort.

565. *S. nodosa*, L., var. *Marilandica*, Gray.
Woods and waste places ; common.

Chelone, Tourn. Turtle Head. Snake Head.

566. *C. glabra*, L.
Boggy places, Muscatine county ; infrequent.
567. *C. obliqua*, L. Purple Turtle Head.
Along Muscatine slough ; infrequent.

Penstemon, Mitchell. Beard-tongue.

568. *P. pubescens*, Solander.
Dry sandy soil ; frequent.
569. *P. lævigatus*, Solander, var. *Digitalis*, Gray.
Frequent in Cedar River region ; infrequent elsewhere.
570. *P. grandiflorus*, Nutt.
Sandy soil ; not rare, but confined to a limited area in Muscatine Island and Cedar River region.

Mimulus, L.

571. *M. ringens*, L. Monkey Flower.
Wet places ; common.

Conochea, Aublet.

572. *C. multifida*, Benth.
Sandy soil, banks of Mississippi ; frequent.

Herpestis, Gaertn. f.

573. *H. rotundifolia*, Pursh.
Shallow pond near Muscatine.

Gratiola, L. Hedge Hyssop.

574. *C. Virginiana*, L.
Damp places ; rather frequent.

Ilysanthes, Raf.

575. *I. riparia*, Raf. False Pimpernel.
Wet places ; common.

Synthyris, Benth.

576. *S. Houghtoniana*, Benth.
Sandy soil in open woods, Cedar River region ; not rare.

Veronica, L. Speedwell.

577. *V. Virginica*, L. Culver's-root.
Prairies and woods ; common.
578. *V. scutellata*, L. Marsh Speedwell.
Low wet ground at Noels, Scott county.
579. *V. peregrina*, L. Neckweed. Purslane Speedwell.
Damp ground ; common.
580. *V. arvensis*, L. Corn Speedwell.
Dry soil, open woods ; infrequent.

Seymeria, Pursh.

581. *S. macrophylla*, Nutt. Mullein Foxglove.
Moist place near West Davenport ; Cedar River region.

Gerardia, L.

582. *G. grandiflora*, Benth.
Open woods ; infrequent.
583. *G. auriculata*, Michx.
Low grounds and prairies ; infrequent.
584. *G. aspera*, Dougl.
Cedar River region ; infrequent.
585. *G. purpurea*, L. Purple Gerardia.
Low grounds ; infrequent.
586. *G. tenuifolia*, Vahl. Slender Gerardia.
Low or dry ground ; frequent.
587. *G. tenuifolia*, var. *asperula*, Gray.
Dry hill at Wild Cat Den.

Castilleja, Mutis.

588. *C. coccinea*, Spreng. Scarlet-painted-Cup.
Dry sterile hills and sandy prairies ; becoming scarce.

Pedicularis, Tourn. Lousewort.

589. *P. Canadensis*, L. Wood Betony.
Damp hillsides, open woods, etc. ; frequent.
590. *P. lanceolata*, Michx.
Wet places, Cedar River region, Allen's Grove, Donahue.

OROBANCHACEÆ.**Aphyllon, Mitchell.** Naked Broom-rape.

591. *A. uniflorum*, Gray. One-flowered Cancer-root.
Richman's Woods near Muscatine. One plant, May, 1878.

LENTIBULARIACEÆ.**Utricularia**, L. Bladder-wort.

592. *U. vulgaris*, L.
Ponds and slow-flowing water of Muscatine county; frequent.
593. *U. biflora*, Lam.
Collected in a pond near Cedar River, October, 1878.

BIGNONIACEÆ.**Tecoma**, Juss.

594. *T. radicans*, Juss. Trumpet Creeper.
Near old dwellings; Fairport, Wyoming Hill.

Catalpa, Scop., Walt.

595. *C. bignonioides*, Walt.
Sparingly escaped; Blue Grass.

PEDALIACEÆ.**Martynia**, L.

596. *M. proboscidea*, Glox. Unicorn Plant.
Several plants were found growing in the bed of a creek
south of Pleasant Prairie, in 1894. Muscatine, 1878.

ACANTHACEÆ.**Ruellia**, Plumier.

597. *R. ciliosa*, Pursh.
Dry grounds; frequent.

VERBENACEÆ.**Verbena**, Tourn.

598. *V. urticæfolia*, L. White V.
Waste grounds; common.
599. *V. angustifolia*, Michx.
Sandy river banks; common.
600. *V. hastata*, L. Blue V.
Waste places; common.
601. *V. stricta*, Vent. Hoary V.
Prairies and waste places; common.

602. *V. bracteosa*, Michx.
Waste places ; common.
V. hastata x urticæfolia.
Frequent.
603. *V. hastata x bracteosa*.
Along Pine Creek, near Wild Cat Den. 1894.
604. *V. hastata x stricta*.
Common with the parent species.
605. *V. stricta x angustifolia*.
This hybrid is frequent wherever the parent species are contiguous, as on prairies bordering river banks.
606. *V. stricta x bracteosa*.
Frequent in the vicinity of Moscow.

Lippia, Houst.

607. *L. lanceolata*, Michx. Fog-fruit.
River banks ; common.

Phryma, L.

608. *P. Leptostachya*, L. Lopseed.
Open woods ; common.

LABIATÆ.**Isanthus**, Michx.

609. *I. cæruleus*, Michx. False Pennyroyal.
Dry sandy soil ; frequent.

Teucrium, Tourn.

610. *T. Canadense*, L. Wood Sage.
Low grounds ; common.

Perilla, L.

611. *P. ocymoides*, L.
Has escaped from cultivation near Blue Grass and persisted for ten years.

Mentha, Tourn. Mint.

612. *M. viridis*, L. Spearmint.
Low grounds ; not frequent.
613. *M. Canadensis*, L. Wild Mint.
Low grounds ; common.

Lycopus, Tourn. Water Hoarhound.

614. *L. Virginicus*, L. Bugle-weed.
Low places ; common.

615. *L. rubellus*, Moench.
River banks ; frequent.

616. *L. sinuatus*, Ell.
Wet grounds ; common.

Pycnanthemum, Michx. Mountain Mint.

617. *P. lanceolatum*, Pursh.
Prairies and dry woods ; common.
618. *P. linifolium*, Pursh.
Dry prairies ; common.
619. *P. muticum*, Pers., var. *pilosum*, Gray.
Hillsides and dry grounds ; frequent.

Hedeoma, Pers.

620. *H. pulegioides*, Pers. American Pennyroyal.
Dry soils ; frequent.
621. *H. hispida*, Pursh.
Dry prairies and barrens ; common.

Salvia, L. Sage.

622. *S. azurea*, Lam., var. *grandiflora*, Benth.
C. R. I. & P. railroad track, Muscatine.
623. *S. lanceolata*, Willd.
Sandy soil ; Muscatine Island, streets of Davenport and Muscatine. Infrequent.

Monarda, L. Horse Mint.

624. *M. fistulosa*, L. Wild Bergamot.
Borders of woods, fencerows, and roadsides ; common. Albinos are occasionally found.
625. *M. punctata*, L. Horse Mint.
Sandy soil along rivers ; common.

Blephilia, Raf.

626. *B. hirsuta*, Benth.
Damp woods ; frequent.

Lophanthus, Benth. Giant Hyssop.

627. *L. nepetoides*, Benth.
Thickets and borders of woods ; frequent.
628. *L. scrophulariaefolius*, Benth.
With the last ; infrequent.

Nepeta, L.

629. **N. Cataria, L.** Catnip.
Near dwellings and in open woods ; common.
630. **N. Glechoma, Benth.** Ground Ivy.
Shady places near dwellings ; frequent.

Scutellaria, L. Skullcap.

631. *S. lateriflora, L.*
Wet places ; common.
632. *S. versicolor, Nutt.*
Woods ; infrequent.
633. *S. canescens, Nutt.*
Banks of streams ; frequent.
634. *S. parvula, Michx.*
Gravelly hillsides ; rather common.
635. *S. parvula, Michx., var. mollis, Gray.*
River banks, Buffalo, Devil's Glen.
636. *S. galericulata, L.*
Wet shady places along rivers ; frequent.
637. *S. nervosa, Pursh.*
Shady woods along Wapsipinicon ; infrequent.

Brunella, Tourn.

638. *B. vulgaris, L.* Heal-all.
Moist woods ; common.

Physostegia, Benth.

639. *P. Virginiana, Benth.* False Dragon-head.
Low wet grounds ; infrequent.

Marrubium, Tourn.

640. **M. vulgare, L.** Common Hoarhound.
Waste places near dwellings ; infrequent.

Leonurus, L.

641. **L. Cardiaca, L.** Motherwort.
Waste places near dwellings ; frequent.

Lamium, L. Dead-Nettle.

642. **L. amplexicaule, L.**
Cultivated grounds near East Davenport.

Stachys, Tourn. Hedge Nettle.

643. *S. palustris*, L.
Moist grounds ; common.
644. *S. aspera*, Michx.
Moist grounds ; frequent.

PLANTAGINACEÆ.**Plantago**, Tourn. Plantain. Ribwort.

645. *P. major*, L.
Railroad tracks and streets ; frequent.
646. *P. Rugelii*, Decaisne.
Waste grounds, yards, etc.; very common.
647. *P. lanceolata*, L. Ribgrass. English P.
Introduced with clover and grass seed ; infrequent.
648. *P. Patagonica*, Jacq., var. *aristata*, Gray.
Dry prairies ; infrequent.
649. *P. Virginica*, L.
Sandy soil ; Noels, Muscatine.

NYCTAGINACEÆ.**Oxybaphus**, Vahl.

650. *O. nyctagineus*, Sweet.
Dry soil ; frequent on railroad tracks.

ILLECEBRACEÆ.**Anychia**, Michx. Forked Chickweed.

651. *A. dichotoma*, Michx.
Dry wooded hillsides ; common.
652. *A. capillacea*, DC.
Sandy woods, Cedar River region.

AMARANTACEÆ.**Amarantus**, Tourn.

653. *A. hypochondriacus*, L.
Railroad tracks in Davenport and Muscatine ; also an escape near gardens.

- 654. **A. paniculatus**, L.
Waste places ; frequent.
- 655. **A. retroflexus**, L. Pigweed.
Cultivated and waste grounds ; very common.
- 656. **A. chlorostachys**, Will.
Frequent.
- 657. **A. albus**, L. Tumble Weed.
Waste and cultivated grounds ; common.
- 658. **A. blitoides**, Watson.
Waste places ; common.
- 659. **A. Torreyi**, Benth.
Railroad track from Fruitland to Fairport ; frequent. Introduced from the Southwest.

Acnida, Mitch. Water Hemp.

- 660. **A. tuberculata**, Moq.
River banks ; frequent.

Froelichia, Moench.

- 661. **F. Floridana**, Moquin.
Dry sandy places ; abundant locally.

CHENOPODIACEÆ.

Cycloloma, Moquin. Winged Pigweed.

- 662. **C. platyphyllum**, Moquin.
Usually found with *Froelichia*.

Chenopodium, Tourn.

- 663. **C. Boscianum**, Moquin.
Open woods ; frequent.
- 664. **C. album**, L. Lamb's Quarters. Pigweed.
Fields and waste places ; very common.
- 665. **C. urbicum**, L.
Streets of Davenport and Muscatine.
- 666. **C. murale**, L.
Streets of Muscatine.
- 667. **C. hybridum**, L. Maple-leaved Goosefoot.
Moist rich soil ; frequent.
- 668. **C. glaucum**, L.
Waste grounds of Davenport and Muscatine

669. **C. Botrys**, L. Jerusalem Oak. Feather Geranium.
Banks of Cedar River ; waste places in Davenport and Muscatine.

670. **C. ambrosioides**, L. Mexican Tea.
Waste places near habitations in Davenport and Muscatine.

Atriplex, Tourn.

671. **A. patulum**, L., var. *hastatum*, Gray.
Streets of Davenport and Eldridge.

Salsola, L.

672. **S. Kali**, L., var. *tragus*, DC. Russian Thistle.
Railroad tracks, Davenport and Muscatine ; becoming abundant at the latter place.

PHYTOLACCACEÆ.

Phytolacca, Tourn.

673. **P. decandra**, L. Pokeweed.
Near dwellings ; infrequent.

POLYGONACEÆ.

Rumex, L.

674. **R. Britannica**, L. Great Water Dock.
Wet places ; frequent.
675. **R. altissimus**, Wood. Pale Dock.
Moist soil ; not uncommon.
676. **R. verticillatus**, L. Swamp Dock.
Margins of ponds along rivers ; infrequent.
677. **R. crispus**, L. Curled Dock.
Waste places ; common.
678. **R. obtusifolius**, L. Bitter Dock.
Muscatine, Buffalo, Davenport.
679. **R. acetosella**, L.
Dry fields ; common. Becoming a pest in meadows and pastures.

Polygonum, Tourn. Knotweed.

680. **P. aviculare**, L.
Yards and waste places ; common.
681. **P. erectum**, L.
With the last ; common.

682. *P. ramosissimum*, Michx.
Sandy soil ; rather common.
683. *P. tenue*, Mickx.
Sandy soil, Cedar River, Muscatine Island.
684. *P. lapathifolium*, L., var. *incarnatum*, Watson.
Wet grounds ; common.
685. *P. Pennsylvanicum*, L.
Moist waste grounds ; common.
686. *P. amphibium*, L.
In water and mud, ponds along the Mississippi, Cedar, and Wapsie ; infrequent.
687. *P. Muhlenbergii*, Watson.
Low grounds ; common. A troublesome weed.
688. *P. Hartwrightii*, Gray.
Margins of ponds ; Eldridge, Noels, and islands of Mississippi River.
689. *P. orientale*, L. Prince's Feather.
Escaped from Gardens ; frequent along river bank in Muscatine and Davenport.
690. *P. Persicaria*, L.
Waste places ; common.
691. *P. Hydropiper*, L.
Wet grounds ; common.
692. *P. acre*, HBK.
Wet grounds ; common.
693. *P. Virginianum*, L.
Moist rich woodlands ; infrequent.
694. *P. sagittatum*, L. Arrow-leaved Tear-thumb.
Low grounds ; rather frequent.
695. *P. Convolvulus*, L. Black Bindweed.
Waste places ; frequent.
696. *P. dumetorum*, L., var. *scandens*, Gray.
Thickets ; frequent.
697. *P. cuspidatum*, Sieb. & Zucc.
Escaped from gardens at Wilton.
- Fagopyrum**, Tourn.
698. *F. esculentum*, Moench. Buckwheat.
Spontaneous in fields and roadsides.

ARISTOLOCHACEÆ.**Asarum**, Tourn.

699. *A. Canadense*, L. Wild Ginger.
Rich woods ; not rare.

Aristolochia, Tourn.

700. *A. Serpentaria*, L. Virginia Snakeroot.
Woodlands, Wyoming Hill, T'w'p. Seventy-six ; rare.

SANTALACEÆ.**Comandra**, Nutt.

701. *C. umbellata*, Nutt. Bastard Toad-flax.
Dry grounds ; frequent.

EUPHORBIACEÆ.**Euphorbia**, L. Spurge.

702. *E. Geyeri*, Engelm.
Common in sandy soil near Cedar River.
703. *E. glyptosperma*, Engelm.
Sandy soil ; frequent near Cedar River.
704. *E. maculata*, L.
Waste places ; common.
705. *E. Preslii*, Guss.
Waste places ; common.
706. *E. hexagona*, Nutt.
Sandy soil, Cedar River region.
707. *E. marginata*, Pursh.
Escaped ; streets of Davenport and Muscatine.
708. *E. corollata*, L.
Fields and waste places ; common.
709. *E. dentata*, Michx.
Sandy soil, Fruitland.
710. *E. heterophylla*, L.
Sandy soil along rivers ; frequent.
711. *E. dictyosperma*, Fischer & Meyer.
Sandy soil along rivers ; infrequent.
712. *E. Cyparissias*, L.
Escaped from gardens ; frequent.

713. **E. Peplus, L.**

Muscatine; infrequent. Probably of recent introduction.

Croton, L.714. *C. glandulosus, L.*

Sandy soil; common.

715. *C. capitatus, Michx.*

Dry sandy soil; abundant locally; West Davenport, islands
of the Mississippi, Camp McClellan.

716. *C. Texensis, Muell.*

Front street, Muscatine; infrequent.

Acalypha, L.717. *A. Virginica, L.* Three-seeded Mercury.

Fields, woods and waste places; common.

718. *A. Virginica, var. gracilens, Muell.*

Dry sandy soil; frequent and abundant locally.

URTICACEÆ.**Ulmus, L.** Elm.719. *U. fulva, Michx.* Slippery or Red Elm.

Woods; rather uncommon.

720. *U. Americana, L.* River or White Elm

Along streams; common.

Celtis, Tourn.721. *C. occidentalis, L.* Hackberry.

Woods and river banks; frequent.

Cannabis, Tourn.722. *C. sativa, L.* Hemp.

Waste places; common.

Humulus, L.723. *H. Lupulus, L.* Hop.

Woods, roadsides, and near dwellings; infrequent.

Maclura, Nutt.724. *M. aurantiaca, Nutt.* Osage Orange.

Planted as hedge and very sparingly escaped.

Morus, Tourn.725. *M. rubra, L.* Red Mulberry.

Rich woods; infrequent.

Urtica, Tourn.

726. *U. gracilis*, Ait. Nettle.
Moist waste places ; infrequent.

Laportea, Gaudichaud.

727. *L. Canadensis*, Gaudichaud. Wood Nettle.
Rich woods ; infrequent.

Pilea, Lindl.

728. *P. pumila*, Gray. Richweed. Clearweed.
Moist shady woods ; frequent.

Boehmeria, Jacq.

729. *B. cylindrica*, Willd. False Nettle.
Moist rich soil ; rare. Wild Cat Den ; Noels.

Parietaria, Tourn.

730. *P. Pennsylvanica*, Muhl.
Moist shady places ; common.

PLATANACEÆ.**Platanus, L.**

731. *P. occidentalis*, L. Sycamore. Buttonwood.
River banks ; common.

JUGLANDACEÆ.**Juglans, L**

732. *J. cinerea*, L. Butternut. White Walnut.
Woods ; frequent.
733. *J. nigra*, L. Black Walnut.
Woods ; rather common.

Carya, Nutt. Hickory.

734. *C. olivæformis*, Nutt. Pecan.
Along rivers ; rare within our limits. Islands of the Mississippi River.
735. *C. alba*, Nutt. Shell-bark or Shag-bark H.
Common.
736. *C. sulcata*, Nutt. . Big Shell-bark. King Nut.
Infrequent in our limits. Along Wapsipinicon River, on islands of Mississippi, along Cedar River.
737. *C. tomentosa*, Nutt. Mocker Nut. White-heart H.
The most common hickory.

738. *C. amara*, Nutt. Bitter Nut or Swamp H.
Frequent in low grounds and not rare in hilly woodlands.
739. *C. olivæformis x tomentosa*.
Big timber near Muscatine.
740. *C. olivæformis x amara*.
Big timber near Muscatine.

CUPULIFERÆ.

Betula, Tourn.

741. *B. lutea*, Michx. f. Yellow or Gray Birch.
Along rivers; common.

Corylus, Tourn.

742. *C. Americana*, Walt. Wild Hazelnut.
Thickets and open woods; common.

Ostrya, Micheli.

743. *O. Virginica*, Willd. American Hop-Hornbeam.
Woods; frequent.

Carpinus, L. Hornbeam. Ironwood.

744. *C. Caroliniana*, Walter. Blue or Water Beech.
Along creeks; infrequent.

Quercus, L. Oak.

745. *Q. alba*, L. White Oak.
Common.
746. *Q. macrocarpa*, Michx. Burr Oak.
Common.
747. *Q. bicolor*, Willd. Swamp White Oak.
Along rivers; frequent.
748. *Q. Muhlenbergii*, Engelm. Chestnut Oak.
Bluff woodlands below Muscatine. Several trees on hillside
by railroad cut near N. W. Davenport (Radenhausen).
749. *Q. rubra*, L. Red Oak.
Common.
750. *Q. coccinea*, Wang., var. *tinctoria*, Gray. Yellow-barked Oak.
Frequent.
751. *Q. ellipsoidalis*, E. J. Hill.
One tree near Big Rock. See description at end of list.

752. *Q. palustris*, Du Roi. Pin Oak.
Along rivers ; frequent.
753. *Q. imbricaria*, Michx. Shingle Oak.
Cedar T'w'p. and Offerman's Island. Several trees at each place.

SALICACEÆ.**Salix**, Tourn. Willow.

754. *S. nigra*, Marsh. Black Willow.
Along streams ; common.
755. *S. amygdaloides*, Anders.
Along streams ; rather common. One tree having hermaphrodite flowers grows near Blue Grass.
756. *S. Fragilis*, L. Crack Willow.
Several trees along stream near Blue Grass.
757. *S. alba*, L., var. *vitellina*, Kock.
Frequent.
758. *S. Babylonica*, Tourn. Weeping Willow.
Two trees near Muscatine and one northeast of Eldridge, apparently spontaneous.
759. *S. longifolia*, Muhl.
Low wet grounds ; common.
760. *S. rostrata*, Richardson.
A single shrub in low ground at Eldridge.
761. *S. discolor*, Muhl. Glaucous Willow.
Banks of creeks ; rather common.
762. *S. humilis*, Marsh. Prairie Willow.
Dry prairies ; frequent.
763. *S. petiolaris*, Smith.
Low wet grounds ; frequent.
764. *S. purpurea*, L.
Along Mud Creek, Muscatine.
765. *S. cordata*, Muhl. Heart-leaved Willow.
Wet places ; common.
766. *S. cordata*, var. *angustata*, Anders.
With the type ; infrequent.

Populus, Tourn. Poplar.

767. *P. alba*, L. Silver Leaf.
Roadsides ; common.
768. *P. tremuloides*, Michx. American Aspen.
Woods ; infrequent.
769. *P. grandidentata*, Michx. Large-toothed Aspen.
Open woods ; frequent.
770. *P. monilifera*, Ait. Cottonwood.
Planted extensively.

CERATOPHYLLACEÆ.**Ceratophyllum, L.**

771. *C. demersum*, L. Hornwort.
Ponds and slow-flowing water ; frequent.

CONIFERÆ.**Pinus, Tourn.**

772. *P. Strobus*, L. White Pine.
A few large trees grow on cliffs at Wild Cat Den.

Juniperus, L.

773. *J. Virginiana*, L. Red Cedar.
Rocky hillsides ; infrequent.

HYDROCHARIDACEÆ.**Elodea, Michx.**

774. *E. Canadensis*, Michx. Water Weed.
Ponds and slow streams ; frequent.

Vallisneria, L.

775. *V. spiralis*, L. Tape Grass. Eel Grass.
Ponds of Mississippi River islands.

ORCHIDACEÆ.**Microstylis, Nutt.**

776. *M. ophioglossoides*, Nutt. Adder's Mouth.
Woods along Millar's Creek in Bloomington Township.
Collected once, 1892. (Mackenzie.)

Liparis, Richard. Twayblade.

777. *L. liliifolia*, Richard.
Moist woods ; Allen's Grove, Wild Cat Den., etc. ; infrequent.

778. *L. Loeselii*, Richard.

Boggy places, Cedar River region ; rare.

Corallorhiza, Haller.

779. *C. odontorhiza*, Nutt. Coral-root.

Three plants in rich woods at Allen's Grove, Sept. 17, 1892.

Spiranthes, Richard. Ladies' Tresses.

780. *S. cernua*, Richard.

Wet meadows and boggy places ; infrequent.

781. *S. gracilis*, Bigelow.

Dry soil ; Wild Cat Den, Cedar River region, Muscatine ; rare.

Goodyera, R. Br.

782. *G. pubescens*, R. Br. Rattlesnake Plantain.

Wooded ravine at Wild Cat Den ; also found sparingly in the Cedar River region.

Calopogon, R. Br.

783. *C. pulchellus*, R. Br.

Boggy places in Cedar River region. With *Lechea tenuifolia*, *Helianthemum Canadense*, *Coreopsis palmata*, and *Viola pedata* on a dry gravelly hillside at Wild Cat Den! Infrequent.

Orchis, L.

784. *O. spectabilis*, L. Showy Orchis.

Rich woods ; infrequent. Abundant at Allen's Grove, Scott county.

Habenaria, Willd. Rein Orchis.

785. *H. tridentata*, Hook.

Borders of hilly woods in damp sandy soil along Cedar River ; infrequent.

786. *H. virescens*, Spreng.

Meadow in vicinity of Salisbury Bridge, Cedar River region.

787. *H. bracteata*, R. Br.

Moist rich woodlands ; infrequent. In dry soil with *Asclepias quadrifolia* at Wild Cat Den.

788. *H. leucophæa*, Gray.

Moist prairies near Eldridge. First observed after the rainy spring of 1898.

Cypripedium, L. Lady's Slipper.

789. *C. candidum*, Muhl. Small White Lady's Slipper.
Abundant in a swale near Eldridge, blooming in very wet
years only. Muscatine; rare.
790. *C. parviflorum*, Salisb. Smaller Yellow L.
Rich woods; infrequent.
791. *C. pubescens*, Willk. Larger Yellow L.
Rich woods; more frequent than the preceding species.
792. *C. spectabile*, Swartz. Showy L.
Boggy places and wet hillsides in various localities in Musca-
tine county; now quite scarce.

IRIDACEÆ.**Iris, Tourn.** Flower-de-Luce.

793. *I. versicolor*, L. Larger Blue Flag.
Wet places; common.

Sisyrinchium, L.

794. *S. angustifolium*, Mill.
Meadows; common.

AMARYLLIDACEÆ.**Hypoxis, L.**

795. *H. erecta*, L. Star Grass.
Grassy places; common.

DIOSCOREACEÆ.**Dioscorea, Plumier.**

796. *D. villosa*, L. Wild Yam-root.
Woods; rather common.

LILIACEÆ.**Smilax, Tourn.** Green Brier. Cat Brier.

797. *S. herbacea*, L. Carrion Flower.
Moist woods and river banks; infrequent.
798. *S. cecirrhata*, Watson.
Woods; frequent. In the low forms there are no tendrils,
in taller plants the upper leaves are tendril-bearing.
799. *S. hispida*, Muhl.
Thickets and moist woods; frequent.

Allium, L.

800. *A. tricoccum*, Ait. Wild Leek.
Rich woods ; frequent.
801. *A. Canadense*, Kalm. Wild Garlic.
Prairies and open woods ; common.

Camassia, Lindl.

802. *C. Fraseri*, Torr. Wild Hyacinth.
Rich open woods and prairies ; infrequent.

Polygonatum, Tourn.

803. *P. giganteum*, Dietrich. Great Solomon's Seal.
Moist woods ; frequent.

Asparagus, Tourn.

804. *A. officinalis*, L.
Escaped from cultivation.

Smilacina, Desf. False Solomon's Seal.

805. *S. racemosa*, Desf. False Spikenard.
Moist woods ; common.
806. *S. stellata*, Desf.
With the last ; common.

Maianthemum, Wigg.

807. *M. Canadense*, Desf.
Steep rocky hillside at Wild Cat Den ; confined to small area.

Uvularia, L

808. *U. grandiflora*, Smith. Bellwort.
Moist rich woods ; infrequent.

Oakesia, Watson.

809. *O. sessilifolia*, Watson.
Cedar River region, in woods ; infrequent.

Erythronium, L.

810. *E. albidum*, Nutt. White Dog's-tooth Violet.
Rich woods ; frequent.

Lilium, L. Lily.

811. *L. Philadelphicum*, L. Wild Orange-red Lily.
Dry prairies ; infrequent.
812. *L. Canadense*, L. Wild Yellow Lily.
Prairies, meadows, and borders of woods ; not infrequent.

Trillium, L. Wake Robin. Birthroot.

813. *T. recurvatum*, Beck.

Rich woods ; infrequent.

814. *T. erectum*, L.

Rich woods ; scarce. Flowers white, rather small.

PONTEDERIACEÆ.

Pontederia, L.

815. *P. cordata*, L. Pickerel-weed.

Ponds and slowly-flowing waters ; frequent in Muscatine Co.

Heteranthera, Ruiz. & Pav.

816. *H. graminea*, Vahl. Mud Plantain.

Mud and shallow water ; infrequent.

XYRIDACEÆ.

Xyris, Gronov.

817. *X. flexuosa*, Muhl. Yellow-eyed Grass.

Boggy places near Cedar River ; rare.

COMMELINACEÆ.

Commelina, Dill.

818. *C. Virginica*, L.

Dry sandy soil along railroad tracks near Fruitland.

Tradescantia, L. Spiderwort.

819. *T. Virginica*, L.

Railroad tracks ; common.

820. *T. Virginica*, var. *villosa*, Watson.

Sandy soil, Cedar River region. Flowers are often light rose-color.

JUNCACEÆ.

Juncus, Tourn. Rush.

821. *J. marginatus*, Rostk.

Muscatine county ; infrequent.

822. *J. tenuis*, Willd.

Fields, roadsides, etc. ; common.

823. *J. acuminatus*, Michx.

Muscatine county ; infrequent.

824. *J. nodosus*, L., var. *megacephalus*, Torr.

Wet grounds ; common.

825. *J. Canadensis*, J. Gay.

Muscatine county ; infrequent.

Luzula, DC. Wood Rush.

826. *L. vernalis*, DC.

Moist sandy soil at Wild Cat Den.

827. *L. campestris*, DC.

Woodlands ; infrequent.

TYPHACEÆ.

Typha, Tourn.

828. *T. latifolia*, L. Cat-tail.

Sloughs ; common.

Sparganium, Tourn. Burr-reed.

829. *S. eurycarpum*, Engelm.

Marshy places ; rather frequent.

830. *S. simplex*, Huds., var. *androcladum*, Engelm.

Marshy places. Along Cedar River in Lake T'w'p., Muscatine county, June, 1894. Atalissa, September, 1896. Infrequent in Scott county.

ARACEÆ.

Arisæma, Martins.

831. *A. tryphyllum*, Torr.

Moist rich woods ; frequent.

832. *A. Dracontium*, Schott. Dragon-root.

Low grounds along rivers ; frequent.

Symplocarpus, Salisb.

833. *S. foetidus*, Salisb. Skunk Cabbage.

Swampy grounds ; infrequent.

Acorus, L.

834. *A. Calamus*, L.

Swampy grounds ; infrequent.

LEMNACEÆ.

Spirodela, Schleiden.

835. *S. polyrrhiza*, Schleiden.

Ponds ; common.

Lemna, L. Duckweed.836. *L. trisulca*, L.

Ponds near Cedar River ; abundant locally.

837. *L. minor*, L.

Ponds ; frequent. Found in bloom along Cedar River near the B. C. R. & N. Railroad bridge, September 24, 1894.

Wolffia, Horkel.838. *W. Columbiana*, Karsten.Growing with *L. trisulca*, *L. minor*, and *Spirodela* in Oeping's Pond, near Moscow.839. *W. Brasiliensis*, Weddell.

Ponds ; common.

ALISMACEÆ.**Alisma, L.**840. *A. Plantago*, L. Water Plantain.

Shallow water and margins of ponds ; common.

Sagittaria, L. Arrow-head.841. *S. variabilis*, Engelm.Wet places ; common. The varieties, *obtusa*, *latifolia*, and *angustifolia* are also found.842. *S. heterophylla*, Pursh.

Sloughs and swampy places on Muscatine Island ; not rare.

843. *S. graminea*, Michx.

Wet places ; frequent.

844. *S. calycina*, Engelm.

In mud and shallow water along the Mississippi River. Muscatine Island.

Echinodorus, Richard.845. *E. rostratus*, Engelm.

Margins of ponds, etc. Muscatine Island ; infrequent.

NAIADACEÆ.**Potamogeton, Tourn.** Pondweed.846. *P. natans*, L.

Ponds along Cedar River ; infrequent.

847. *P. Pennsylvanicus*, Cham.

Ponds along Cedar River, June, 1894. Infrequent.

848. *P. Spirillus*, Tuckerm.
Shallow pond on Muscatine Island, July, 1894. (Mackenzie.)
1896.
849. *P. fuitans*, Roth.
Rivers, sloughs and ponds. Plants in the Mississippi River
have the submersed leaves over a foot long.
850. *P. amplifolius*, Tuckerm.
Ponds and sloughs along Cedar River; infrequent. July,
1894.
851. *P. Illinoensis*, Morong.
Muscatine Slough and ponds on Muscatine Island; rather
frequent.
852. *P. zosteræfolius*, Schum.
Ponds along Cedar River; infrequent.
853. *P. pauciflorus*, Pursh.
Ponds and sloughs; rather frequent.
854. *P. pusillus*, L.
Ponds and sloughs along Cedar River; not frequent.
855. *P. mucronatus*, Schrad.
Muscatine Slough and sloughs along Cedar River.
856. *P. pectinatus*, L.
Ponds and sloughs; not infrequent.
- Zannichellia**, Micheli.
857. *Z. palustris*, L.
Ponds and sloughs of Muscatine county; frequent.
- Naias**, L.
858. *N. flexilis*, Rostk. & Schmidt.
Habitat and range of the preceding but less frequent.

CYPERACEÆ.

Cyperus, Tourn.

859. *C. diandrus*, Torr.
Low grounds along Cedar River; infrequent.
860. *C. diandrus*, Torr., var. *castaneus*, Torr.
Low grounds; common.
861. *C. aristatus*, Rottb.
Sandy soil along rivers; frequent.

862. *C. acuminatus*, Torr.
Low sandy soil ; Noels ; near Follets.
863. *C. Schweinitzii*, Torr.
Dry sandy soil along Cedar and Wapsipinicon Rivers.
864. *C. filiculmis*, Vahl.
With the last ; also on dry hillside at Wild Cat Den.
865. *C. erythrorhizos*, Muhl.
River shores ; frequent.
866. *C. esculentus*, L.
Cultivated grounds ; rather frequent.
867. *C. strigosus*, L.
Common in moist soil.
868. *C. strigosus*, L., var. *compositus*, Britton.
Wet grounds ; infrequent.
869. *C. speciosus*, Vahl.
Usually found with *C. erythrorhizos*, Muhl.

Dulichium, Pers.

870. *D. spathaceum*, Pers.
Margins of ponds ; Moscow ; Noels.

Eleocharis, R. Br. Spike Rush.

871. *E. atropurpurea*, Kunth.
Growing with *Fimbristylis capillaris*, Gray, in wet sand near Fruitland. Determined by Britton.
872. *E. ovata*, R. Br.
In mud and wet sand ; rather frequent.
873. *E. palustris*, R. Br.
Common in low ground.
874. *E. palustris*, R. Br., var. *glaucescens*, (Willd.) Gray.
Low wet ground ; Davenport, Noels.
875. *E. tenuis*, Schultes.
Frequent.
876. *E. compressa*, Sullivant.
Frequent in low grounds.
877. *E. acicularis*, R. Br.
Common in wet grounds.

Fimbristylis, Vahl.

878. *F. autumnalis*, Roem. & Schult.

Wet sandy soil; infrequent. Two forms have been observed; the form found near the Wapsipinicon and Cedar Rivers has low, tufted culms, papillose hairy leaves, compound umbel, and smooth achene; the form found near Fruitland is erect, not tufted, with simple umbels, and sculptured achene smaller and more obovate.

878. *F. capillaris*, Gray.

Sandy soil; Fruitland, Noels.

Scirpus, Tourn. Bulrush. Club Rush.

879. *S. pungens*, Vahl.

Shores of Mississippi River; frequent.

880. *S. lacustris*, L.

Sloughs and river shores; common.

881. *S. supinus*, L., var. *Hallii*, Gray.

Fruitland; rare.

882. *S. atrovirens*, Muhl.

Common in wet places.

Eriophorum, L. Cotton Grass.

883. *E. lineatum*, Benth. & Hook.

Wet places; frequent.

884. *E. cyperinum*, L.

With the last but less frequent.

885. *E. polystachon*, L.

Swale near Eldridge (two plants); infrequent in boggy soil along Cedar River.

Hemicarpha, Nees.

886. *H. subsquarrosa*, Nees.

In sand along rivers; frequent.

Scleria, Berg. Nut Rush.

887. *S. triglomerata*, Michx.

Dry sterile hillside, Wild Cat Den.

Carex, Ruppius. Sedge.

888. *C. Grayii*, Carey.

River banks; frequent.

- 889. *C. lupulina*.
Borders of ponds and along rivers ; frequent.
- 890. *C. monile*, Tuckerm.
Swales. Moscow, Noels.
- 891. *C. hystericina*, Muhl.
Sloughs and creeks ; common.
- 892. *C. Pseudo-Cyperus*, L., var. *Americana*, Hochst.
Borders of ponds in the Cedar River region ; infrequent.
- 893. *C. squarrosa*, L.
With *C. Grayii*, Carey, but less frequent. Our plant is *C. typhinoides*, Schwein.
- 894. *C. Shortiana*, Dewey.
Marshy soil in a ravine at Wild Cat Den.
- 895. *C. filiformis*, L., var. *latifolia*, Boeckl.
Common. A form with narrow leaves is frequent.
- 896. *C. trichocarpa*, Muhl.
Margin of a pond, Little's Grove, Scott county.
- 897. *C. trichocarpa*, Muhl., var. *Deweyii*, Bailey.
Common on banks of Mississippi River. Noels.
- 898. *C. fusca*, All.
Swales near Noels and Eldridge.
- 899. *C. stricta*, Lam., var. *angustata*, Bailey.
Swales ; frequent.
- 900. *C. stricta*, Lam., var. *decora*, Bailey.
Swales ; frequent.
- 901. *C. longirostris*, Torr.
Cliff near Big Rock, with *Stipa spartea*, Trin. Abundant on Government Island.
- 902. *C. Davisii*, Schwein. & Torr.
Low grounds ; Noels, Moscow, West Liberty.
- 903. *C. grisea*, Wahl.
Banks of Wapsipinicon ; infrequent.
- 904. *C. grisea*, Wahl., var. *angustifolia*, Boot.
(*C. amphibola*, Stend.)
Moist soil, especially rich woodlands along rivers ; frequent.
- 905. *C. conoidea*, Schkuhr.
Low unbroken prairie near Noels ; rare.

906. *C. oligocarpa*, Schkuhr.
Rich woods ; frequent.
907. *C. laxiflora*, Lam.
Rich woods ; common.
908. *C. laxiflora*, Lam., var. *striatula*, Carey.
(*C. laxiflora blanda*, (Dew.) Boott.)
With the last ; common.
909. *C. laxiflora*, Lam., var. *latifolia*, Boott.
(*C. albursina*, Sheldon.)
Moist rich woods ; Wild Cat Den, Allen's Grove.
910. *C. digitalis*, Willd., var. *copulata*, Bailey.
Growing with the last in ravines at Wild Cat Den ; rare.
911. *C. tetanica*, Schkuhr., var. *Meadii*, Bailey.
Grass lands ; frequent.
912. *C. Pennsylvanica*, Lam.
Dry woodlands ; common.
913. *C. communis*, Bailey.
Large tufts of this species grow upon sides of cliffs at Wild
Cat Den ; rare.
914. *C. pubescens*, Muhl.
Rich woods ; infrequent.
915. *C. Jamesii*, Schwein.
Moist rich woods ; Wilton, Wild Cat Den ; rare.
916. *C. stipata*, Muhl.
Low wet ground ; not common.
917. *C. crus-corvi*, Shuttlew.
Borders of Muscatine Slough ; rare.
918. *C. grvida*, Bailey.
Dry soil ; frequent.
919. *C. grvida*, Bailey, var. *laxifolia*, Bailey.
Dry sandy soil ; Buffalo, Noels.
920. *C. vulpinoidea*, Michx.
Common in low ground.
921. *C. xanthocarpa*, Bicknell.
(Bull. Torr. Club, XX, 22 (1896).)
Dry meadows ; Buffalo, Blue Grass.

922. *C. Sartwellii*, Dewey.
Low places ; infrequent.
923. *C. rosea*, Schkuhr.
Rich woods ; frequent.
924. *C. sparganioides*, Muhl.
Rich woods ; infrequent.
925. *C. cephaloidea*, Dewey.
Low ground near Valley City, Scott county ; rare.
926. *C. cephalophora*, Muhl.
Dry sterile soil ; frequent.
927. *C. sterilis*, Willd., var. *excelsior*, Bailey.
(Bull. Torr. Club, XX, 425, (1893). "Very like *C. Atlantica*."—Prof. Bailey.)
Low grass land ; Buffalo, Scott county. Abundant locally.
928. *C. interior*, Bailey.
(Bull. Torr. Club, XX, 426, (1893).)
Swale near Eldridge, Scott county. Abundant locally.
929. *C. Muskingumensis*, Schwein.
In woods along Mississippi and Wapsipinicon Rivers ; infrequent.
930. *C. tribuloides*, Wahl.
Low ground ; frequent.
931. *C. tribuloides*, Wahl., var. *cristata*, Bailey.
Moist ground ; rather common
932. *C. scoparia*, Schkuhr.
Low ground ; frequent.
933. *C. foenea*, Willd.
Dry grass land near Eldridge. "Very like *C. silicea*."—Prof. Bailey.
934. *C. foenea*, Willd., var. *perplexa*, Bailey.
Swales near Noels and Buffalo ; on a dry wooded hillside near Big Rock. Rare.
935. *C. straminea*, Willd.
Open woods along Wapsipinicon River and at Blue Grass.
936. *C. straminea*, Willd., var. ?.
Dry woods and prairies ; rather frequent.
937. *C. straminea*, Willd., var. *ferruginea*, Bailey.
In a swale near Walcott, Scott county ; rare.

GRAMINEÆ.

Spartina, Schreber.

938. *S. cynosuroides*, Willd. Fresh-water Cord-grass.
Banks of rivers and creeks; common.

Paspalum, L.

939. *P. setaceum*, Michx.
Our plant is the *P. ciliatifolium* of Michaux. Dry sandy soil;
infrequent.

Panicum, L. Panic Grass.

940. *P. filiforme*, L.
Dry sterile hillside, Wild Cat Den.
941. *P. glabrum*, Gaudin.
This and the next species are common in all soils; as
observed in our range *P. glabrum* thrives better in poor
soil than *P. sanguinale*.
942. *P. sanguinale*, L. Crab or Finger Grass.
943. *P. proliferum*, Lam.
Common. Abundant in rich waste places where the soil has
been disturbed, especially roadsides upon which "graders"
have been used and railroad tracks "surfaced" with loose
earth.
944. *P. capillare*, L. Old-witch Grass.
Common.
945. *P. autumnale*, Bosc.
Abundant over limited area of sand at Fruitland and Noels.
946. *P. virgatum*, L.
River banks and low grounds; common.
947. *P. latifolium*, L.
Rich woods; infrequent.
948. *P. scoparium*, Lam.
Moist grass lands; infrequent.
949. *P. depauperatum*, Muhl.
Dry soil, Wild Cat Den, Noels.
950. *P. dichotomum*, L.
Meadows, prairies and open woods; common.
951. *P. pubescens*, Lam.
Low prairies; frequent.

952. **P. Crus-galli**, L. Barnyard Grass.

Common in moist waste and cultivated grounds. Especially abundant in 1892. The awnless form (var. *muticum*, Vasey.) is frequent on the banks of the Mississippi River in Davenport and Muscatine.

Setaria, Beauv. Bristly Foxtail Grass.953. **S. verticillata**, Beauv.

Streets and waste places of Davenport; Muscatine, West Liberty; common.

954. **S. glauca**, Beauv.

Common.

955. **S. viridis**, Beauv.

Common.

956. **S. Italica**, Kunth. "Hungarian."

A frequent escape into waste places.

Cenchrus, L. "Sand Burr." Hedgehog Grass.957. **C. tribuloides**, L.

Sandy soil; common and abundant.

Leersia, Swartz.958. **L. Virginica**, Willd. White Grass.

Moist woods; rather infrequent.

959. **L. oryzoides**, Swartz. Rice Cut-Grass.

Marshy places; frequent.

960. **L. lenticularis**, Michx. Catch-fly Grass.

Low grounds along Mississippi River; common.

Zizania, Gronov.961. **Z. aquatica**, L. Indian Rice. Water Oats.

Shallow ponds of Muscatine Island and the Cedar River region; frequent.

Tripsacum, L. Gama-Grass. Sesame-Grass.962. **T. dactyloides**, L.

A large clump on railroad near Wyoming Hill, Muscatine county.

Andropogon, Royen. Beard-Grass.963. **A. furcatus**, Muhl.

Dry prairies; common.

964. **A. scoparius**, Michx.

Dry soil; common.

965. *A. Hallii*, Hackel.

Well established in several places on C. R. I. & P. Railroad
near Fairport.

Chrysopogon, Trin.

966. *C. nutans*, Benth. Indian Grass. Wood Grass.

Dry prairies; common.

Sorghum,

967. *S. Halepense*, L.

Railroad tracks, Wilton, Muscatine, Fairport.

Phalaris, L. Canary Grass.

968. *P. arundinacea*, L. Reed Canary Grass.

Shallow water; Eldridge, Walcott, Cedar River region.

969. *P. arundinacea*, L., var. *picta*, Gray. Ribbon Grass.

Street, Eldridge, Davenport.

Aristida, L. Triple-awned Grass.

970. *A. basiramea*, Engelm.

Dry sandy soil; Muscatine Island, Cedar River region, Noels.

971. *A. gracilis*, Ell.

With the last at Muscatine Island and Noels.

972. *A. oligantha*, Michx.

Becoming frequent in dense patches; Davenport, Buffalo,
Blue Grass.

973. *A. tuberculosa*, Nutt.

Sandy soil, Muscatine county; infrequent.

Stipa, L.

974. *S. spartea*, Trin. Porcupine Grass.

Dry prairies; frequent.

Oryzopsis, Michx. Mountain Rice.

975. *O. melanocarpa*, Muhl.

Rocky woods, Wild Cat Den.

Muhlenbergia, Schreber.

976. *M. sobolifera*, Trin.

Rocky woods, Wild Cat Den; rare.

977. *M. glomerata*, Trin.

Low grounds; common.

978. *M. Mexicana*, Trin.

Low grounds; common.

979. *M. sylvatica*, Torr. & Gray.
Frequent in low or rocky woods.
980. *M. Willdenovii*, Trin.
Dry woods ; frequent.
981. *M. diffusa*, Schreber. Drop Seed. Nimble Will.
Dry woods and waste places ; common.

Brachyelytrum, Beauv.

982. *B. aristatum*, Beauv.
Rocky woods, Wild Cat Den.

Phleum, L.

983. *P. pratense*, L. Timothy.
Common.

Alopecurus, L. Foxtail.

984. *A. geniculatus*, L.
Low moist places ; infrequent.

Sporobolus, R. Br. Drop-seed Grass.

985. *S. asper*, Kunth.
Dry sandy soil ; frequent.
986. *S. neglectus*, Nash.
(*S. vaginæflorus*, Vasey.—Manual.)
For nomenclature of this and the next species see Bull. Torr.
Club, XXII:464. 1895.
Dry soil ; frequent. Very abundant locally.
987. *S. vaginæflorus*, Wood.
(*S. minor*, Vasey.—Manual.)
Dry soil ; hardly less frequent than the preceding species.
988. *S. heterolepis*, Gray.
Dry prairies ; frequent.
989. *S. cryptandrus*, Gray.
Dry sand ; Muscatine Island, banks of Cedar River.

Agrostis, L.

990. *A. alba*, L. Fiorin. White Bent-Grass.
Meadows ; infrequent.
991. *A. alba*, L., var. *vulgaris*, Thurb. Red Top.
Meadows ; common.
992. *A. perennans*, Tuckerm. Thin-Grass.
Rich woods ; infrequent.

993. *A. scabra*, Willd. Hair Grass.
Dry soil ; frequent.

Cinna, L.

994. *C. arundinacea*, L. Wood Reed-Grass.
Moist woods ; Allen's Grove, Wild Cat Den.

Calamagrostis, Adans.

995. *C. Canadensis*, Beauv. Blue-Joint Grass.
Wet grounds ; rather common.

Avena, Tourn. Oat.

996. *A. fatua*, L.
B. C. R. & N. tracks, Blue Grass.

Danthonia, DC. Wild Oat-Grass.

997. *D. spicata*, Beauv.
Dry rocky soil ; Wild Cat Den, Wyoming Hill.

Bouteloua, Lagasca. Muskit-Grass.

998. *B. hirsuta*, Lag.
Sandy soil ; Muscatine Island and the Cedar River region ;
frequent.
999. *B. racemosa*, Lag., var. *aristosa*, Gray.
Sandy soil ; frequent.

Eleusine, Gaertn.

1000. *E. Indica*, Gaertn. Dog's-Tail Grass.
Street, Muscatine.

Triodia, R. Br.

1001. *T. cuprea*, Jacq. Tall Red Top.
Dry gravelly soil, Wyoming Hill.
1002. *T. purpurea*, Hack. Sand-Grass.
Dry sand, Muscatine county ; frequent.

Phragmites, Trin. Reed.

1003. *P. communis*, Trin.
Borders of ponds ; infrequent.

Koeleria, Pers.

1004. *K. cristata*, Pers.
Dry hills and prairies ; rather common.

Eatonia, Raf.

1005. *E. obtusata*, Gray.
Dry prairies ; not common.

1006. *E. Pennsylvanica*, Gray.
Moist meadows ; common.

Eragrostis, Beauv.

1007. *E. reptans*, Nees.
Moist soil along rivers ; frequent.
1008. *E. major*, Host.
Common.
1009. *E. Frankii*, Meyer.
Moist soil ; common. With the odor of *E. major*.
1010. *E. Purshii*, Schrader.
Common.
1011. *E. tenuis*, Gray.
Sandy soil ; Fruitland.
1012. *E. pectinacea*, Gray.
Common in dry sandy soil along railroads.

Melica, L.

1013. *M. diffusa*, Pursh.
Muscatine county ; rare.

Dactylis, L.

1014. *D. glomerata*, L. Orchard Grass.
Streets and waste places ; frequent.

Poa, L. Meadow Grass. Spear Grass.

1015. *P. annua*, L. Low Spear Grass.
Sparingly escaped from lawns, Davenport.
1016. *P. compressa*, L. English Blue Grass.
Dry soil ; common.
1017. *P. scrotina*, Ehrhart. False Red Top.
Wet meadows ; infrequent.
1018. *P. pratensis*, L. Bluegrass.
Common everywhere.
1019. *P. debilis*, Torr.
Rocky woods near base of cliff at Wild Cat Den ; rare.

Glyceria, R. Br. Manna Grass.

1020. *G. nervata*, Trin. Fowl Meadow Grass.
Moist meadows ; common.
1021. *G. fluitans*, R. Br.
Shallow water ; infrequent.

Festuca, L. Fescue Grass.

1022. *F. tenella*, Willd.
Dry sterile soil ; common.
1023. *F. ovina*, L.
Escaped into waste places.
1024. *F. nutans*, Willd.
Rocky woods ; rather common.
1025. *F. Shortii*, Kunth.
(*F. nutans*, Willd.—Manual.)
Swale near Noels ; rare.
1026. *F. elatior*, L., var. *pratensis*, Gray.
Railroad track, Blue Grass ; rare.

Bromus, L. Brome Grass.

1027. *B. secalinus*, L. Cheat or Chess.
Railroad tracks and waste ground near grain fields ; common.
1028. *B. ciliatus*, L., var. *purgans*, Gray.
Moist woods ; frequent.
1029. *B. tectorum*, L.
Sandy railroad embankment ; Fairport. Rare.

Lolium, L.

1030. *L. perenne*, L. Darnel.
Escaped from lawns ; Eldridge, Muscatine.

Agropyrum, Gaertn.

1031. *A. repens*, Beauv. Couch- or Quick-Grass.
Railroad tracks ; common. Becoming a troublesome weed.

Hordeum, Tourn. Barley.

1032. *H. jubatum*, L. Squirrel-tail Grass.
Common.
1033. *H. pratense*, Huds.
Our plants of this species belong to *H. pusillum*, Nutt.
Dry sandy soil along railroads ; infrequent.

Elymus, L. Wild Rye.

1034. *E. Virginicus*, L.
Waste land ; common.
1035. *E. Canadensis*, L.
With above ; common.

1036. *E. Canadensis*, L., var. *glaucofolius*, Gray.
With above; infrequent.
1037. *E. striatus*, Willd., var. *villosus*, Gray.
Wooded hillsides; frequent.

Asprella, Willd.

1038. *A. Hystrix*, Willd. Bottle-brush Grass.
Moist woods; frequent.

EQUISETACEÆ.**Equisetum**, L. Horse-Tail. Scouring Rush.

1036. *E. arvense*, L.
Common in sandy soil.
1040. *E. hyemale*, L. Shave Grass.
Common in wet soil.

FILICES.**Polypodium**, L. Polypody.

1041. *P. vulgare*, L.
Rock ledges, Wild Cat Den.

Adiantum, L. Maidenhair.

1042. *A. pedatum*, L.
Shady woods; frequent.

Pteris, L. Brake.

1043. *P. aquilina*, L.
Thickets and open woods; frequent.

Pellæa, Link. Cliff Brake.

1044. *P. atropurpurea*, Link.
Limestone ledges; Wyoming Hill, Montpelier, and Devil's
Glen.

Asplenium, L. Spleenwort.

1045. *A. ebeneum*, Ait.
Open sandy woods; rare. Muscatine county.
1046. *A. thelypteroides*, Michx.
Wild Cat Den.
1047. *A. Filix-foemina*, Bernh.
Moist woods; frequent.

Camptosorus, Link. Walking Leaf.

1048. *C. rhizophyllus*, Link.
Wild Cat Den ; on sandstone ledges.

Phegopteris, Fee. Beech Fern.

1049. *P. polypodioides*, Fee.
Wild Cat Den ; rare.
1050. *P. hexagonoptera*, Fee.
Rich woods ; frequent.

Aspidium, Swartz. Shield or Wood Fern.

1051. *A. Thelypteris*, Swartz.
Boggy places and marshes ; frequent.
1052. *A. spinulosum*, Swartz.
Wild Cat Den ; rare in other localities.
1053. *A. cristatum*, Swartz.
Boggy places in Cedar River region and other localities ; rare.
1054. *A. Goldianum*, Hook.
Wild Cat Den.
1055. *A. acrosticoides*, Swartz. Christmas Fern.
Ravines and shady banks in woods ; frequent.

Cystopteris, Bernhardt. Bladder Fern.

1056. *C. bulbifera*, Bernh.
Moist shaded places ; infrequent.
1057. *C. fragilis*, Bernh.
Rocky woods ; frequent.

Onoclea, L.

1058. *O. sensibilis*, L. Sensitive Fern.
Low moist places ; common.
1059. *O. Struthiopteris*, Hoffmann.
Low rich woods ; Wild Cat Den, Moscow.

Woodsia, R. Brown.

1060. *W. obtusa*, Torr.
Rocky places ; infrequent.

Osmunda, L. Flowering Fern.

1061. *O. regalis*, L.
Semi-boggy places in Cedar River region. Local, becoming
very rare.

1062. *O. Claytoniana*, L.
Hilly woods ; frequent.
1063. *O. cinnamomea*, L. Cinnamon Fern.
Boggy places in Cedar River region ; local.

OPHIOGLOSSACEÆ.

Botrychium, Swartz. Moonwort.

1064. *B. Virginianum*, Swartz.
Rich woods ; frequent.

LYCOPODIACEÆ.

Lycopodium, L. Club Moss.

1065. *L. lucidulum*, Michx.
Wild Cat Den and Cedar River region , rare.
1066. *L. complanatum*, L. Ground Pine.
Collected in 1892 in woods east of Wild Cat Den.

SELAGINELLACEÆ.

Selaginella, Beauv.

1067. *S. rupestris*, Spreng.
Sandy soil near Cedar River ; local. Among clumps of
Opuntia Rafinesquii.

SALVINIACEÆ.

Azolla, Lam.

1068. *A. Caroliniana*, Willd.
Floating on water, Muscatine Slough.

Cnicus Hillii, Canby. Garden and Forest 4:101, 1891.

Observations made since the publication of this species in 1891, and accurate drawings, furnish material for a more complete description and understanding of this thistle, which well maintains its claim to specific rank.

Plant perennial, 1—2 feet high, leafy, simple or branched, villous pubescent or somewhat woolly. Root 8—15 inches long, simple or fascicled (1—4), generally perpendicular, the parts fusiform or the middle portion more or less enlarged and hollow or coarsely cellular, slender above. Leaves sinuate lobed to pinnatifid, or the lower undulate, the lobes rather broad and rounded, green both sides, acute or the lower obtuse, dentate, spinulose or with a few short prickles; the upper oblong to oblong-lanceolate, sessile and clasping; the lower oblanceolate to spatulate-oblong, narrowed at the base, or the lowest petioled and 6—8 inches long. Vernal and autumnal leaves rosulate, oblanceolate-oblong, entire or slightly undulate, with short and weak marginal prickles, or sometimes with stouter yellowish prickles. Heads 1—3 (1—5), frequently single, 2—3 inches broad, 2—2½ inches high. Outer involucre bracts ovate-lanceolate, tipped with a short bristle or prickle, with a dark and prominent glutinous line along the back, inner, narrowly lanceolate, long acuminate. Flowers purple, pappus slender pointed or sometimes slightly spatulate.

Fields and open woods. June 20—Aug. 1.

The main distinctions between this and the pasture thistle (*Cnicus pumilus*, Torr.), its nearest ally, and with which it was at first confounded, are the duration and form of the root, that of the pasture thistle being biennial and branched, while in this it is perennial, simple, with a few rootlets, mainly on the lower half; its less spinescent and less deeply lobed or divided leaves; the bracts of the involucre more glutinous; their weaker tips which are scarcely prickly except in the lowermost; the longer and more slender pappus; the earlier flowering season, the first half of summer, while that of *C. pumilus* is the latter half. The leaves of the pasture thistle cover the stem well up to the head to which they may form a kind of involucre, while those of *C. Hillii* are few and small near the head, or the stem may

be bare for an inch or two. The form of the root is a very safe means of identification at any season when it can be found. If more than one they are similar in shape and all spring from the base of the stem. Its habits are like those of the pasture thistle, growing in fields and meadows, and it seems to take the place of that species in the central and western states, and may fitly be termed the western pasture thistle.

E. J. HILL.

***Quercus ellipsoidalis*, E. J. Hill. Botanical Gazette 27:205, 1899.**

Trees 30—60 feet high, 1—3 feet in diameter, the head oblong, spray repeatedly and finely dividing, the limbs usually coming low down on the trunk, the lower drooping. The bark is close, quite smooth, $\frac{1}{2}$ — $1\frac{1}{2}$ in. thick, divided by shallow fissures into narrow, thin, flat plates, 2—6 in. long. It is dark near the base, dull gray above, grayish brown and quite smooth among the branches, dull red within, with a thin band of yellow next the wood. The winter buds are small, $\frac{1}{8}$ — $\frac{1}{4}$ in. long, ovate, obtuse or acutish, with a rusty or grayish pubescence. The leaves are broadly oval to oval-orbicular or somewhat obovate orbicular in outline, $2\frac{1}{2}$ —6 in. long, $1\frac{1}{2}$ —5 or more wide, lustrous green and smooth above, lighter green and smooth beneath or with slight tufts of pale hairs in the axils of the principal veins, and are deeply cut into 5—7 lobes by broad and rounded sinuses which extend half way or more to the midrib. The base is bluntly cuneate or truncate, petioles rather slender, 1—2 in. long, generally tinged with red on the upper side. In autumn the leaves are yellowish to pale brown, often blotched or tinged with purple or sometimes of a vinous or crimson purple. They are quite persistent on the trees in winter. The aments are long and slender, loosely flowered pubescent. Calyx campanulate, variously cut into 2—5 segments which are fringed with long hairs. Stamens 4 or 5; filaments shorter than the anthers. Pistillate flowers on stout tomentose 1—3 flowered peduncles, the calyx variously divided into 5—7 parts, the margin laciniate-hairy. Styles 3, thick and flattened, spreading or recurved. Acorns single or in pairs, the cup turbinate or cup-shaped, thin, or in some thickened and rounded near the margin, covering $\frac{1}{3}$ — $\frac{1}{2}$ the nut. The cup scales are brownish, more or less puberulent, closely appressed, occasionally loosening a little near the rim on

drying. Nut chestnut brown, often striped with darker lines, $\frac{1}{2}$ — $\frac{3}{4}$ in. long, ellipsoidal to oval-cylindrical, or when short and broad oval-globular, the base and apex mostly rounded about equally. The kernel is pale yellow and bitter.

Q. ellipsoidalis more closely resembles *Q. palustris* in general appearance than any other of the biennial-fruited oaks. This is seen in the comparative smoothness of the bark, the depression of the lower limbs, which descend low down on the trunk except when much crowded in dense woods; and in the finely divided leaves and general character of the branching. But it differs in the form of the leaf-lobes, in the color of the bark, and especially in the form and size of the nut and acorn-cup. The lower branches, though long persistent, die and fall off like those of the pin oak, but do not leave the stubs so characteristic of that species. It resembles *Q. coccinea* in the form of some of its acorns, in the lobation of the leaves and reddish color of the inner bark, but the outer bark is darker and generally much smoother than on trunks of the scarlet oak of similar age and size, and the leaves do not turn scarlet in autumn. *Q. velutina* is suggested by the darker color of the bark near the base of the trunk, the band of yellow next to the wood, the dull color of the autumn leaves, the hairs in the axils of the veins beneath, though this is a feature of *Q. palustris* and is frequent in *Q. coccinea*; but the bark is not rough and black, a character that appears very early on boles of the black oak; the yellow of the inner bark is usually much less in amount, the acorns differ in shape, and especially in the loosened or squarrose densely puberulent scales of the cup.

E. J. HILL.

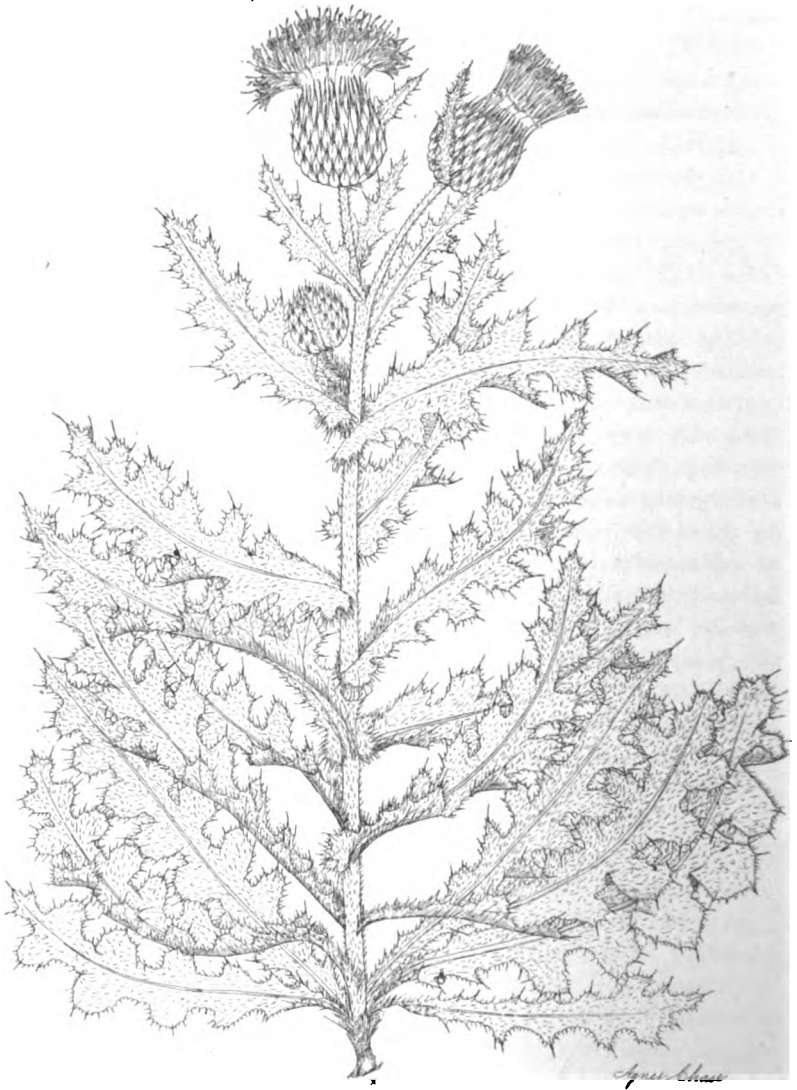


PLATE I.

PLATE I.

CNICUS HILLII, Canby. One-third natural size.

PLATE II.

- FIG. 1. Root of plant illustrated in Plate I. One-third natural size.
FIG. 2. Fascicled root. Two-ninths natural size.
FIG. 3. A root. One-third natural size.
FIG. 4. Vernal plant. One-third natural size.
FIG. 5. Outer involucral bract. Two-thirds natural size.
FIG. 6. Inner involucral bract. Two-thirds natural size.
FIG. 7. Flower. Two-thirds natural size.
FIG. 8. Achene and pappus. Two-thirds natural size.



PLATE II.

SYNOPSIS OF PROCEEDINGS
OF THE
DAVENPORT ACADEMY OF SCIENCES.
1899—1900.

January 18, 1899—ADJOURNED ANNUAL MEETING.

President Edward S. Hammatt in the chair. The minutes of the Annual Meeting, January 5, 1898, were read and approved and the annual reports of the various officers were presented.

The annual report of the Recording Secretary, E. M. White, showed that during 1898 there were ten regular monthly meetings of the Academy and three meetings of the Board of Trustees. Five honorary, two life and six regular members were elected, while one life and two regular members died.

The Librarian, C. E. Harrison, reported 2,099 accessions to the library. In addition to the books obtained by exchange the library was enriched by forty volumes on geology and palæontology, all new to the library and of great value for scientific work, from the library of Prof. W. H. Barris, presented by Miss Elizabeth D. Putnam; sixty-one volumes, some of them rare, from Dr. S. C. Bowman of Andalusia, Ill.; and sixty-seven volumes from a private scientific library in Davenport which will eventually come to the Academy. The entomological library of J. Duncan Putnam, numbering 270 volumes, was catalogued by Miss Alice Beach and the entire library overhauled, cleaned and arranged preparatory to cataloguing and binding. Attention was called to the necessity of completing this work in order that the library may be made of greater service.

The Treasurer, Mrs. Mary L. D. Putnam, reported that on account of the unusual expenses for fitting up and rearranging the library, purchasing new cases and cleaning and rearranging the museum, it had been necessary to borrow \$342.52. During the year one-half of

the \$5,000 necessary to purchase the Presbyterian church property adjoining the Academy was subscribed, but efforts in that line were temporarily suspended on account of the Spanish war. The report laid emphasis on the demand for an increased endowment fund.

Below is given a synopsis of accounts for 1898:

GENERAL FUND.

RECEIPTS.

Balance on hand Jan. 1, 1898.....	\$	14.88	
From Dues.....		180.00	
Initiation fees.....		35.00	
Interest.....		91.85	
Sale of case.....		25.00	
Annual subscriptions.....		415.00	
Donations.....		182.94	
Advanced by Mrs. M. L. D. Putnam.....		92.52	
Advanced by Miss E. D. Putnam.....		50.00	
Advanced from publication fund.....		200.00	
Door admission.....		46.66	\$1,333.85

EXPENDITURES.

Salary W. H. Barris, Curator.....	\$	500.10	
M. Mathews, Janitor.....		82.02	
Insurance.....		90.00	
Lights.....		15.53	
Fuel.....		53.99	
Water.....		16.00	
Repairs to furnace.....		12.00	
Repairs to sidewalk.....		21.19	
Miscellaneous supplies.....		5.80	
Printing.....		7.75	
New cases for museum.....		207.00	
Shelves, labels, etc., for library.....		76.01	
Rearranging library.....		111.70	
Postage and express.....		32.85	
Cleaning and arranging museum.....		72.37	
Total expenses, 1898.....	\$	1,304.31	
Amount in bank.....		15.73	
Amount with Curator.....		13.81	\$1,333.85

As chairman of the Publication Committee, Mrs. M. L. D. Putnam reported that during the year five papers had been published and that Volume VII. of the Proceedings was nearing completion. Financially the Publication Fund was in excellent condition. The papers published were:—

“Studies of North American Jassoidea,” by Herbert Osborn and Elmar D. Ball, 66 pages, six plates drawn by Charlotte M. King, and six pages explanatory of plates, used by courtesy of Iowa Experiment Station.

"Notched Bones From Mexico," by Frederick Starr, 10 pages, four plates.

"The Genus *Pediopsis*," by Herbert Osborn and Elmer D. Ball, 28 pages.

"Contribution to the Entomology of New Mexico," by T. D. A. Cockerell, 18 pages.

"Supplement to a Revision of the *Melanopli*," by Samuel H. Scudder, 64 pages, three plates.

Another paper, "Notes on the Habits of Our Tiger Beetles," by H. F. Wickham, is on hand.

The report on the Publication Fund for the year 1898 is given below :

RECEIPTS.

Balance in bank Jan. 1, 1898.....	\$	11.78	
Sale of Proceedings.....		50.80	
Interest on Putnam Memorial Fund		427.50	
Interest on bank deposit.....		2.09	
Advanced by Mrs. M. L. D. Putnam.....	100.00		\$ 592.17

EXPENITURES.

Edward Borchardt, printing.....	\$	238.30	
Egbert, Fidler & Chambers, binding.....		87.50	
Advanced to General Fund.....		200.00	
Total expenses, 1898.....	\$	525.80	
Balance in bank.....		66.37	
	\$	592.17	\$ 592.17

Dr. Elmer was called to the chair and the President delivered his annual address.

PRESIDENT'S ANNUAL REPORT.

EDWARD S. HAMMATT, January 18, 1899.

Members of the Academy, Ladies and Gentlemen:

Can we look back on the year just closed with satisfaction at the progress we have made in the development of the fundamental ideas of this society as expressed in its title, "Academy of Natural Sciences?" What have we done to increase man's knowledge of nature or love for nature study? We may embrace these questions in one and answer them in an account of the Academy work during the past year. The statistical reports of the Publication and Finance Committees show that the first part of Volume VII. of the Academy Proceedings is nearly ready for distribution. Material is available and in the hands of the printer for beginning the second part. The Finance Committee's report indicates the necessity of establishing endowment funds for the various branches of the Academy work. The Curator

reports that over twenty donations, embracing a large number of specimens, have been added to our Museum collection, making it imperative that arrangements should soon be made for future additions to the Museum space.

Attention must again be called to our list of Corresponding Members. This list should be revised as soon as possible and corrected lists of Honorary, Life, Corresponding and Regular Members kept posted in the Curator's office. Corresponding Members should be required to notify the Academy of their location once a year.

We find from the Librarian's report that the Library has received some 2,099 accessions in foreign and American exchanges. A Library fund is necessary before we can bind and catalogue the Library or make its treasures available for public use. The floor space in the Library heretofore used for lecture audiences has been given up to a number of cases containing most of our collection of Ornithology.

It is clear from these reports that the capacity of our building is near its limit. We are forced to seek other quarters for Academy lectures. Adjacent property, with a building which would serve for some time as a lecture hall and store room, is available by purchase. A special committee is making progress toward this end.

The steady growth and prosperity of this city demands that we keep the Academy equipment abreast of the times with facilities for active work. The Academy has in the past, and must in the future, keep well in advance of the situation. The annual reports just presented give a fair statement of the Academy work during the past year. But they do not include a report on educational work, such as the name "Academy of Natural Sciences" would indicate as of pre-eminent importance. We have not advanced nor taken the lead we should in such matters. The spirit of a new century is already beginning to awaken us to better methods in every branch of human progress. Science, and especially natural science, is the great motive power now working out a complete revolution in the aims and methods of modern thought, both as regards mental and moral instruction. Scientific methods are now applied to every branch of study. The closing year of the nineteenth century finds Religion and Science, so far asunder at its beginning, closely united in the great struggle for the uplifting of humanity. And today we accept Science teaching as the most adequate method of imparting moral instruction by bringing the child face to face with the great truths of nature. It is with this end in view that those interested in the Academy have repeatedly urged a closer relation between the Academy and the public schools. It is a simple duty we owe this community, that from our Academy should go forth a powerful influence for building up of character by means of nature study.

In a previous annual report your attention was called to the importance of a uniform system of weights and measures for scientific as well as commercial purposes. Your indulgence may be asked in again

considering the question in view of the fact that this year may see the adoption by the United States government of the system now in almost universal usage. It seems strange that Great Britain and the United States, the two most enlightened of civilized nations, should be among the last to adopt measures which will not only put them in touch with the advance of science in other countries, but will effect a great economic reform in commercial transactions. A measure known as the Hurley Bill was introduced in the Fifty-fourth Congress and failed to pass by only three votes. It is now on the House calendar and is quite likely to become a law during the present session of Congress. This bill is entitled "A Bill to fix the standard of weights and measures by the adoption of the metric system of weights and measures" and provides "That from and after the first day of July, nineteen hundred, all the departments of the Government of the United States, in the transaction of all business requiring the use of weight and measurement, except in completing the survey of public lands, shall employ and use only the weights and measures of the metric system, and from said first day of July, nineteen hundred, the metric system of weights and measures shall be the legal standard of weights and measures recognized in the United States." The adoption of this measure is opportune—just as we are entering upon a period of territorial expansion and opening up commercial relations with distant colonies which will use American products and serve as distributing stations for our exports to other countries. The metric bill now pending before Congress is of such great importance that it may be of interest to recall some of the facts leading to the adoption of the system by the United States and our own connection with the international metrological movement. It is a singular coincidence that while the United States Government, then in its infancy, was considering a plan of unification of weights and measures, France was investigating the same problem. In 1790 Talleyrand, in view of the great diversity of weights and measures then in use in France, proposed to members of the Constituent Assembly that "either the old system should be reformed or a new universal standard be adopted." It was decided to have the French Academy of Sciences fix upon an invariable standard for weights and measures. Borda, Lagrange, Laplace, Minge, and Condorcet were chosen as a committee to report upon the selection of a standard. After considering the pendulum beating seconds, a quadrant of the equator, and a meridian quadrant, they selected the ten-millioneth part of a quadrant of the meridian as a standard unit of linear measure. On August 1, 1793, the metric system was provisionally adopted by the National Assembly of France and on April 7, 1795, the nomenclature the system now bears was adopted. In the United States Washington, realizing the necessity of a uniform system, introduced the subject in his message to the First Congress, saying: "Uniformity in the currency, weights and measures of the United States is an object of great importance and will, I am persuaded, be

duly attended to." The subject was referred by the House of Representatives to Jefferson, then Secretary of State, for a report, which was made in July, 1790. When it became known that France was considering the same question, the Senate committee to whom had been referred Jefferson's propositions decided that it was best not to introduce any alterations in the standards then in use. Washington, in his address to the Second Congress, again urged the need of action. The subject was next brought to public attention by Madison. This portion of the President's address was referred by the Senate to John Quincy Adams, Secretary of State, who submitted his plan February 22, 1821. He advised consultation with foreign nations for the future and ultimate establishment of universal and permanent uniformity. No further action was taken till 1828, when an Act was passed legalizing a Troy pound as standard for the use of the mint. It was not till July 27, 1866, that the metric system was legalized by act of Congress. The passage of this Act was largely due to Hon. J. A. Kasson of Iowa, chairman of the House committee on coinage, weights and measures, who strongly urged the adoption of the measure in Congress and before the Convocation of the University of New York. In 1873 a committee of the British Association for the Advancement of Science was appointed to "select a nomenclature for dynamical and electrical units," with the intention of making them international. The gramme, centimetre, and second of time were chosen and have been adopted by all scientific men. As the use of the metric system became more general, in order to insure the preservation of metrological prototypes certain nations, among them the United States, agreed by a treaty signed in 1875 to establish an International Bureau of Weights and Measures at Paris. The administration and maintenance of this Bureau is vested in an international committee appointed by the twenty-nine nations that have become parties to the treaty of 1875. The work so far accomplished by the Bureau has been to construct the standards, which have been distributed to the nations forming the Bureau. In addition to this a standard decimal thermometric scale and normal barometer have been constructed. The metric system is in use in the United States Coast and Geodetic Survey and it is to be hoped that our government, after having endorsed the metric system as the best for international usage that has been devised, and a system that has proved adequate for all purposes, will at least require its use in all government transactions. We should, as an Academy of Science, do all in our power to enlist the hearty coöperation of Congressional representatives from Iowa in enacting necessary legislation. Hon. Charles W. Stone, chairman of the Committee on Coinage, Weights and Measures, says in his report to Congress, June 20, 1898: "Put the system in practical and uniform operation in the transactions of the government and the adoption by the people will take care of itself. Its merits will be brought home to them in a practical way and knowledge will inevitably bring approval. No compulsion of the

people is contemplated and none will be necessary. The system of the government of the people will speedily and easily become the system of the people."

It is with regret that we are called upon to record the loss of several members within the past year: Rt. Rev. William Stevens Perry, Second Bishop of Iowa, and Mr. A. J. Smith, both members of several years' standing; Mr. M. Frahm, a member and generous subscriber to the Academy work; Dr. S. C. Bowman of Andalusia, whose interest in the Academy is testified by many additions to the Museum; Major George P. McClelland, one of our life members, who for many years and up to the time of his death took an active part in the Academy work, serving on many important committees and at various times as trustee and treasurer. We can ill afford to lose a member so much interested in the Academy and so well qualified to appreciate its value.

In closing this report, allow me to express my appreciation of the repeated honor conferred upon me, and to return thanks to the more active members, with whom it has been a pleasure to work.

The reading of these reports was followed by the election of the following officers for the year 1899:

President—CHARLES FRANCIS.

First Vice-President—DR. A. W. ELMER.

Second Vice-President—C. A. FICKE.

Recording Secretary—E. M. WHITE.

Treasurer—MRS. M. L. D. PUTNAM.

Corresponding Secretary—W. H. BARRIS.

Librarian—C. E. HARRISON.

Curator—W. H. BARRIS.

Trustees for Three Years—E. S. HAMMATT, EDWARD C. ROBERTS, W. C. PUTNAM, J. F. LARDNER.

The following Honorary Members were elected: Prof. S. Calvin, Prof. T. H. McBride, Prof. C. C. Nutting, all of the State University of Iowa.

January 27, 1899 — REGULAR MEETING.

President Charles Francis in the chair; six members present.

The Curator reported the following additions to the Museum:

From Capt. Hall, purchased by the Mound Fund, 103 flints, one large grooved stone axe, remarkable in material and perfection of workmanship and finish, one long celt wrought of entirely different stone.

The Committee on Resolutions reported the following, which was adopted and entered on the minutes :

The Davenport Academy of Natural Sciences takes this occasion to put upon record its profound sense of bereavement in the death of Major George Pressley McClelland. For a quarter of a century or more he has been one of its main supporters. He was among its most generous patrons. In 1883, with Hon. George H. French and Nicholas Kuhn, he raised some \$3,000 for the debt and endowment of this institution. He was a most faithful trustee and treasurer. He secured Prof. Richard A. Proctor and other lecturers for the Academy course and in countless ways labored for the advancement of science. We mourn the loss of a citizen whose character was pure and lofty. We lament the departure of a friend whose gentle manners and courtly carriage won the love of all who knew him.

JOHN B. DONALDSON.
MARY L. D. PUTNAM.

The following committees were appointed for 1899 :

Finance—W. C. Putnam, J. B. Phelps, C. A. Ficke.

Publication—Mrs. M. L. D. Putnam, Prof. W. H. Barris, Prof. S. Calvin, Dr. C. H. Preston.

Archæology—C. E. Harrison.

Geology—Prof. W. H. Barris.

Conchology—Miss S. F. Sheldon.

Zoölogy—Dr. A. W. Elmer.

Botany—A. A. Miller.

Entomology—Prof. H. B. Osborn.

Library—C. E. Harrison, Charles Francis, E. M. White.

February 24, 1899 — REGULAR MEETING.

President Francis in the chair ; seven members present.

The Curator reported the following additions to the Museum :

From Albert P. Morse of Wellesley College a collection of new American *Odonata* and, to the Library, his paper containing a full description of the same, a paper on "The Study of New England Species of *Spharagenion*," and four papers entitled "Notes on the *Acridæ* of New England." Dr. Scudder has presented the original drawings from which were engraved the illustrations of his paper, just published in Volume VII. of the Proceedings of the Academy. From George R. Putnam, a collection of Eskimo implements, including spears five or six feet in length, furnished with bone sockets and detachable ivory points, adapted to different kinds of game, birds and fish. They were accompanied by a throwing stick by which a powerful momentum is given the spear.

February 28, 1899 — TRUSTEES' MEETING.

President Francis in the chair ; seven Trustees present.

A general discussion as to the advisability of purchasing the First Presbyterian church property adjoining the Academy led to the adoption of a resolution presented by C. A. Ficke, as follows :

Resolved, That the committee be authorized to close the contract for the purchase of the property of the Presbyterian Church on the northwest corner of Seventh and Brady streets, Davenport, Iowa, for the sum of \$5,000, of which sum the church propose to furnish \$500 in the shape of five Life Members at \$100 each ; an amount of \$500 to be paid to the Trustees of the Presbyterian Church to secure the property, and the balance to be paid on the surrender of the property to the Academy.

March 31, 1899 — REGULAR MEETING.

President Francis in the chair ; six members present.

The Curator reported the following gift :

From J. L. Bean of Rock Island two well-preserved specimens of wood taken from wells thirty feet deep at Hampton and Andalusia, Illinois.

The Treasurer reported that \$2,325 had been collected from subscribers to the church fund and \$2,300 paid to the trustees of the church, on account.

The following papers for publication were read by title :

"The Flora of Scott and Muscatine Counties," by W. D. Barnes, Fred Reppert and A. A. Miller.

"The Grasses of Northern Wyoming," by Prof. L. H. Pammel.

"The Fungi of Northern Wyoming," by Prof. H. H. Hume.

Dr. C. H. Preston, chairman of the Committee on Membership, reported the completion of an alphabetical list of all elections to membership—Honorary, Corresponding, Regular and Life—from the foundation of the Academy to the present time, together with a working list of the present members so far as it could be made out without further action of the Academy. He recommended that the Academy remit the dues of delinquents who desire to renew and continue active membership. He also recommended that the list of members be published in the Proceedings.

On motion the rules were suspended and the following were elected Life Members : C. A. Ficke, Mrs. C. A. Ficke, Anthony Burdick, George W. Cable, Hon. Hiram Price, Richard Andresen, Edward C.

Crossett, John L. Zoeckler, Paulo Roddewig, J. J. Richardson, Edward C. Roberts, Thomas Iles, Jr., Harry Vollmer, Jr., Charles E. Harrison, Dr. W. H. Barris, Miss Bessie Ballord, Miss Nellie Leonard, James T. Robinson of Rock Island.

On motion a lecture committee was appointed, consisting of Chas. Francis, Dr. C. H. Preston, C. A. Ficke, Charles E. Harrison, and E. M. White.

April 28, 1899—REGULAR MEETING.

President Francis in the chair ; six members present.

The Curator reported the following gifts to the Museum :

From Capt. Hall, purchased from the Mound Fund, nearly 100 flint implements. From Mrs. Alice Hornby, a large, thick mass of petrified wood, preserving peculiarities of structure. Its upper surface is capped with layers of pure anthracite coal a few inches in thickness and this in turn is encrusted with a silicious deposit preserving and protecting the coal in place. Also a well preserved specimen of the bone of some extinct animal, most probably the elephant, converted into stone. It seems to be the entire top of the articulating surface of the humerus. Both specimens are from western Nebraska, having been sent from Valentine.

Prof. Frederick Starr's paper, "Ethnography of Southern Mexico," was read by title and referred to Publication Committee.

July 28, 1899—REGULAR MEETING.

President Francis in the chair ; seven members present.

The Curator reported additions to the Museum for three months as follows :

From W. H. Barris, a fine specimen of the crustacean known as *Euripterus remipes* of DeKay, from the waterlime group of New York, Black Rock, N. Y.; also a fish from the tertiary of Mount Herman, Palestine. From Prof. J. A. Udden, three bottles of diatom-bearing earth, the first from under the loess on the farm of W. B. Verick in Cedar township, Muscatine county, Iowa ; the second from under trees at Davenport ; the third from under the loess three miles north of Wapello, Louisa county, Iowa. From Miss Clara Holmes, a number of books, a large glass bell case, and a Cupid drawn on a spiderweb.

The Library is indebted to C. E. Harrison for 56 pamphlets, historical works on Iowa.

It was moved and carried that the newly acquired building be reshingled, the same to be paid for out of the first available funds.

W. G. Smith and Rev. G. S. Rollins were elected Regular Members. W. D. Barnes, Morgan Park, Ill., Prof. E. J. Hill, Englewood, Ill., and Rev. M. Kempke were elected Corresponding Members.

September 29, 1899—REGULAR MEETING.

C. A. Ficke, First Vice-President, in the chair; seven members present.

The Curator reported the following additions to the Museum for two months:

From Dr. C. F. Kellogg, Clinton, Iowa, an unusually large, fine specimen of a celt, locality unknown. From the Cemetery Association of West Davenport, a collection of rocks of very variegated character, found in an excavation on their grounds. Among them was a large, flat, finegrained sandstone in which were imbedded a series of good-sized pebbles of quartz and flint, mostly elongated, all rounded and deeply grooved. The peculiarities are, first, grooves in the same general direction; second, no evidence of their extension into the matrix. These pebbles are distributed through the whole thickness of the rock. The specimens deserve careful study. From G. N. Black, a unique specimen of rock of which, as yet, we know little. It seems to be composed of very fine, worn grains of quartz. This is compacted into forms that have a general resemblance to one another and yet are compressed into every possible shape. But order prevails, as each form retains throughout its length from ten to twenty divisions separated by deep furrows and distinguished by a remarkable discoloration of iron. From Mrs. Putnam, from Yellowstone Park, specimens of obsidian granite; petrified and agatized wood; hardened mud from a geyser, with characteristic mass, cones and leaves; from Salt Lake, brown salt rock used in a building of same material with pure white crystallized lining for the inside finish, small natural and large artificial crystals; from Leadville, crystals of lead, iron pyrites, and quartz. From Edward K. Putnam, well-preserved forms of the prevalent species of reptiles and insects from Shoshone, Idaho; an excellent impression of a fish from the Green Mountains; a tinder box, also a wooden sand box which our paper blotters have displaced, from Cape Cod, Massachusetts.

E. Dwight Sanderson's paper on the "Studies of the Immature Stages of Some Chrysomelina" was read by title and referred to the Publication Committee, as was also Samuel H. Scudder's paper on "Synonymical Catalogue of Orthoptera of the United States and Canada."

The following were duly elected Regular Members: Bishop T. N. Morrison, Horace Roberts, Dr. A. L. Hageboeck, John M. Helmick.

October 27, 1899 — REGULAR MEETING.

E. S. Hammatt in the chair ; seven members present.

The Curator reported additions to the Museum as follows :

From George R. Putnam, a large glass case containing life-sized forms of an Eskimo man and woman in full costume, with other Eskimo relics bearing on their customs and manner of living. From Benjamin R. Putnam, from Butte, Montana, specimens of silver, copper and other ores, and a series illustrating the process of smelting copper.

The Publication Committee reported that Volume VII. of the Proceedings was in the hands of the binder and that Volume VIII. was under way, Dr. Scudder's and Prof. Starr's papers being in the hands of the printer.

Ernest C. Oberholzer was elected a Regular Member.

October 27, 1899 — TRUSTEE'S MEETING.

Dr. W. H. Barris in the chair ; five Trustees present.

The bid of the T. W. McClelland Company for roofing the church property, at an expense of \$425.00, of which amount \$100.00 is to apply for a Life Membership for Wilson McClelland, was accepted.

Mrs. M. L. D. Putnam was appointed a committee to conclude arrangements for repairs on the roof and removal of the tower on the church property.

January 5, 1900 — ANNUAL MEETING.

President Charles Francis in the chair ; seven members present.

The reading of reports of officers was postponed until the next regular meeting.

The following officers for 1900 were elected :

President — MRS. M. L. D. PUTNAM.

First Vice-President — C. A. FICKE.

Second Vice-President — DR. A. W. ELMER.

Recording Secretary — A. A. MILLER.

Corresponding Secretary — PROF. W. H. BARRIS.

Treasurer — MISS ELIZABETH D. PUTNAM.

Librarian — C. E. HARRISON.

Curator — W. H. BARRIS.

The election of Trustees was postponed until the next regular meeting.

January 26, 1900—REGULAR MEETING.

Edward S. Hammatt occupied the chair.

The annual reports of Recording Secretary, Librarian, and Curator were read at this meeting.

The report of E. M. White, Recording Secretary, showed that during the year 1899 there had been nine regular meetings of the Academy and two Trustees' meetings. During the year three Honorary, seven Regular, three Corresponding and nineteen Life Members were elected and one Life Member died.

C. E. Harrison, Librarian, reported that during the year there had been 1,587 additions to the Library. An event of unusual interest was the designation of the Academy as one of the permanent depositories, under the law of 1897, for all the maps issued by the United States Geological Survey. During the year the work of making a card catalogue was continued under the direction of Miss Alice Beach. Attention was called to the crowded condition of the Library and the need of more stack-room as well as space for reading tables.

The annual report of Dr. W. H. Barris, Curator, gave a summary of the various additions to the Museum during the year, a detailed enumeration of which is given in the reports of the regular monthly meetings.

As Corresponding Secretary Dr. Barris reported that during the year 1899 there were 246 letters written and acknowledgments made and 153 letters received.

The Curator reported the following additions to the Museum for November, December and January:

From Harry French, a terra cotta lamp, well preserved, ornamented with characters establishing its Greek origin. From Mrs Elizabeth Applewhite, a steel plate engraving of Washington in military costume. From George R. Putnam, a young elephant's tooth found in Alaska; an Alaskan representation executed in wood showing the mother seal carrying her young; two horn spoons made and in use by the natives; and an Alaskan ivory needle case. From Mrs. M. L. D. Putnam, highly ornamented Norwegian articles for household use and wear; and specimens of the work of the Indians of our National Park. From Henry Heim, a large colored engraving of Davenport as it was in 1850.

April 27, 1900 — REGULAR MEETING.

The President, Mrs. M. L. D. Putnam, in the chair; seven members present.

The Librarian reported that 97 books and pamphlets and 11 bound volumes were presented by George R. Putnam.

The Curator reported the following additions to the Museum :

From George R. Putnam, a fine skull of a walrus with tusks, together with stone implements for cooking used by the Eskimos, all from Greenland; also implements for boring and fire making, and a large tusk of a walrus with etched drawings, all the work of the Eskimos of Alaska. From David C. Thomson, a crucifix fish from Dutch Guiana. From W. S. Price, a series of shells, most probably used by Illinois Indians as money. A representation of peculiar meteorological phenomena in January, 1900, taken by Karl Schmallhaus. From C. E. Harrison, a freak of a cottonwood root.

The President announced the following committees for 1900 :

Archæology — Prof. Frederick Starr.

Geology and Palæontology — Prof. W. H. Barris.

Conchology — Miss S. F. Sheldon.

Zoölogy — Dr. A. W. Elmer.

Botany — A. A. Miller.

Entomology — Prof. H. B. Osborn.

Finance — W. C. Putnam, J. B. Phelps, C. A. Ficke.

Publication — Mrs. M. L. D. Putnam, Prof. W. H. Barris, Dr. C. H. Preston, Prof. Samuel Calvin, E. S. Hammatt.

Library — C. E. Harrison, Charles Francis, E. M. White.

Lectures and Entertainment — Mrs. J. J. Richardson, Bishop T. N. Morrison, Dr. J. B. Donaldson, E. S. Hammatt.

The following Trustees were duly elected to serve three years : C. E. Harrison, Dr. Jennie McCowen, Prof. W. H. Barris, A. F. Cutter.

The Publication Committee presented the following report :

The first form of Volume VII. was printed September 13, 1897, and the last form on March 1, 1900. Seventeen hundred copies have been completed, of which 1,200 are in paper, 300 in cloth, and 200 separates. The cost is \$1,180, as follows :

Printing, including plates.....	\$ 880.00
Portrait of C. E. Putnam.....	100.00
Prof. Scudder's plates.....	125.00
Binding.....	75.00
	\$1,180.00

The laborious work of preparing the list of members was done by Dr. C. H. Preston, while the preparation of the index was the work of J. A. Udden, Jr., assisted by his father. The Publication Committee is under great obligation to these gentlemen for the extreme care exercised in their work.

The Treasurer submitted the annual report for the year 1899, as follows:

GENERAL FUND.

RECEIPTS.

Balance on hand Jan. 1, 1899.....	\$ 29.54	
From Dues.....	108.00	
Initiation fees.....	15.00	
Interest, Endowment.....	86.26	
Annual subscriptions.....	352.00	
Donations.....	228.75	
Loans.....	86.26	
Lecture.....	.70	
	<u>\$ 996.51</u>	\$ 996.51

EXPENDITURES.

Salary W. H. Barris, Curator.....	\$ 458.39	
M. Mathews, Janitor.....	85.00	
Fuel.....	30.50	
Water.....	12.00	
Repairs.....	27.75	
Printing.....	5.50	
Postage.....	5.00	
Capt. Hall, Mound Fund.....	5.00	
W. H. Barris, books.....	70.75	
Church Fund, loan repaid.....	25.00	
Indebtedness paid.....	267.52	
Amount on hand Jan. 1, 1900.....	4.10	
	<u>\$ 996.51</u>	\$ 996.51

T. D. Eagal's paper on "The Early History of Davenport" was read by title and ordered to be filed.

On motion it was decided to give the name "Science Hall" to the Presbyterian church building recently purchased by the Academy.

On motion an amendment to Article I. of the Articles of Incorporation, by omitting the word "Natural" in the title of the Academy, was proposed and placed in the hands of the following committee for presentation at a later meeting: E. S. Hammatt, C. A. Ficke.

The President, Mrs. M. L. D. Putnam, read her inaugural address, as follows:

PRESIDENT'S INAUGURAL ADDRESS.

MRS. MARY L. D. PUTNAM, April 27, 1900.

In accepting the presidency of the Academy for the second time, and after a lapse of twenty-one years, it would not be out of place for me to turn backward and review the noble record of devotion and achievement in the past. But my purpose is rather to look at the Academy as it exists today and to find wherein it can accomplish the most good.

An academy of science in a city like Davenport has many and varied functions to fulfill. One of these, the original object of this Academy, and perhaps its highest aim, is to be the center for active scientific work by those who devote their lives to science. In the thirty-three years of its existence the Academy has been such a center. It has reason to be proud of the scientific research and investigation done within its walls by such men as Professor Sheldon, Dr. Parry, Professor Pratt, Dr. Farquharson, J. Duncan Putnam, Dr. Barris, and many others. Let us be thankful for the past and let us be courageous enough to hope that in the rising generation there may be bright young men and women with observing eyes, with clear minds, and with devotion to the pursuit of truth — young men and women who will here do scientific work worthy of the world-wide reputation given to the Academy by its early members.

EDUCATIONAL OPPORTUNITIES.

This suggests that the Academy has a great opportunity before it in the line of education. It is not a teaching institution, but in other ways it can assist in the development of young eyes and minds.

Cordial relations should exist between the Academy and the public schools, St. Katharine's Hall, Augustana College, St. Ambrose College, and all the other educational institutions of Davenport and its vicinity, including the district schools of Scott county. Every opportunity should be offered for the students of these schools and colleges to come to the Academy, to become interested in the museum, to learn by observing. Members of the Academy can accomplish much good by being present on such occasions to explain the collections in which they are specially interested. Afternoon or evening talks, illustrated by actual specimens or by lantern slides, as the case may be, would arouse more interest in the students than whole rows of text books. So, too, the Academy might coöperate in planning excursions to points of natural interest, where the students may see for themselves how valleys are made, learn to know a glacial deposit when they see it, and may appreciate animal and vegetable life in its natural conditions. How otherwise can the physical geography of the country about Davenport be taught, and what does physical geography amount to unless taken out of the books and applied to the region that is best known? Excursions of this sort, for old as well as young, are regular features

in the programme of the Geographical Society of Washington and of the Appalachian Club of Boston.

A dozen or so years ago the Academy became the headquarters of the local chapters of the Agassiz Association. Here were held the weekly meetings at which observations were reported and papers read and discussed. Here, as a result of excursions to the haunts of nature, was begun an embryo museum, not perhaps valuable in itself but of the greatest value in teaching classification and arrangement. Here the would-be scientists—most of them students of the High School—gathered their younger brothers and sisters and friends and helped them organize a junior chapter, an extension movement which was of benefit to all concerned. In course of time the Agassiz chapters ceased to exist, but not until they had accomplished abundant good. Some of the members have maintained their personal interest in natural history or science, but even those who have not, frequently testify that their dabbling in science was not all play; that it had an educational value not to be slighted. A similar organization among the students of today might well be encouraged.

VALUE OF THE MUSEUM.

It is hard to overestimate the educational value of a museum. One function of a museum is to bring together a scientific collection for the purpose of study by specialists, and to preserve those relics of a past race which would otherwise become scattered and lost. Thanks to its early devoted members, its indefatigable collectors and to its generous contributors, the Academy has a scientific museum that has attracted specialists not only from the east and west of our own country, but also from distant Europe. Aside, however, from this strictly scientific value of the museum, there is a popular and educational one. The laboring man in Paris who spends an hour in the Louvre to warm his hands and feet certainly absorbs something from the art treasures spread out before him. Who can tell how much good our own museum has done to those who have drifted in merely to kill time, or because some friend has told them about it? Surely eyes have been opened and the breadth of vision broadened. How much more Egypt means to the boy who has seen the mummy! How much more real are the mound-builders to us who know their animal pipes, their axes of copper covered with cloth! How much nearer to us is the Eskimo when we look upon his kayak, his fire-making tools, and the fur-seal which he hunts! As with primitive and distant man, so with nature. What can teach the ages and growth of the world so well as the rocks and fossils? And what undying interest there is in the cases of birds. The presence of such a museum in Davenport is a boon that we cannot too highly appreciate. To accomplish the greatest good, however, very much remains to be done. Owing to the lack of space in the building, boxes of specimens have never been opened. The purchase of the church property will afford some tem-

porary relief, but the time is not far distant when a new and absolutely fire-proof building, fully equipped with new cases adapted for the preservation and display of specimens, will be a necessity. In the meantime, however, much can be done. The cases need a thorough overhauling and in many instances the specimens need to be reclassified and rearranged, while many labels need to be rewritten. Crowded cases can be relieved by displaying typical specimens and preserving the others for special study. The boy or girl who comes to the Academy to identify a bird he has seen in the yard should be able, as soon as he finds the corresponding specimen here, to learn its common and scientific name, its family and its habitat. The boy who reads in the life of Boone about a beaver should be able to come to the Academy and see a stuffed beaver.

It is interesting to watch the children in the South Kensington museum, in London, flock about a case placed there for their especial benefit, containing the commonest butterflies properly named. Interesting, too, it is to watch older students studying the cases in which types of the orders are scientifically arranged, and under them types of the families in each order, all clearly labeled, and forming a graphic and indelible lesson. Let us, in our humble way, follow the lead of that great London museum and encourage our young students to observe, to compare and to study.

THE HISTORICAL DEPARTMENT.

There is another department of the museum in which the Academy has made a beginning but in which more can be done. This may be called the historical. It is natural for man to be interested in historical trophies, in a tattered flag carried through a war, in a sword captured from the enemy. There is interest even in the weather-beaten wooden ball that topped the flagstaff of the old court house.

No less interesting are the objects connected with our every-day life, objects which we scorn to preserve, but which in a generation become rare and curious. How many of the children of to-day, for instance, ever saw a tinder box? When they read about a tinder box they may ask their grandmother and she may say that she saw one in her girlhood. But some day the grandmothers will be gone and with them the recollection of the tinder box. Fortunately, the Academy possesses a tinder box, but there are many other contrivances of the pioneer days that it does not possess. If any of these are hidden away in a dark and forgotten attic, let them be brought out and placed where they can be preserved.

THE ACADEMY LIBRARY.

From the museum to the library is but a short step. For scientific work, scientific books are a necessity. Technical books and journals are needed for the specialist, handbooks and more popular works are no less needed for the beginner. Thanks to the thousands of

exchanges brought in by its own Proceedings and by the gift of several collections of books by its members, the Academy library is well adapted to the needs of the special student. But there are scores of handbooks, manuals and more or less popular treatises which are not on our shelves and which should be secured either by gift or purchase. Then, too, to make it more accessible, the library needs to be catalogued, a large undertaking of which a beginning has already been made.

The Academy library should be enriched by thousands of historical documents, which, unless they are deposited in some such place, will eventually become destroyed. Old manuscripts, old letters, old maps, everything that throws light on the early life in Davenport, in the three cities, or in the West, should be collected and preserved, to be looked at by the curious and made use of by the historian.

The Academy library and the public library, which the city of Davenport is to have, thanks to the generosity of Andrew Carnegie, are very different in nature, the one specialized and technical, the other more general and popular. Each supplements the other. The Academy may well congratulate itself on this new addition to the forces of culture in the city, for as the community becomes more enlightened through the reading of books from the public library it is bound to appreciate to a higher degree the opportunities of the Academy of Sciences. So far as possible the two institutions should coöperate.

TO POPULARIZE MEETINGS.

The regular monthly meetings of the Academy should be made of such interest that they will attract not only the members but outsiders. The meetings should be freed from petty business matters, which should be attended to by committees. Rather they should furnish an opportunity for the thinking people of the three cities to gather, to exchange thoughts in discussion, or to listen to papers or addresses on subjects of interest. A paper or address before a meeting of the Academy need not be the result of life-long research and investigation. It need not bristle with scientific names, with technical terms, with unintelligible references. Such papers are to be read rather than listened to. What are wanted for the meetings of the Academy are papers that are somewhat more popular in nature, expositions in terms that all can understand of the discoveries made by scientists or on any subject to which the interest of the day is drawn. The Academy has had in recent years a number of such addresses. Returning travelers, for instance, have spoken of Egypt and Alaska. Similar talks, whether by travelers or not, should be given on the Philippines, or Hawaii, or South Africa. These are subjects not only of scientific but of popular interest. Near at home extremely interesting talks could be given on the engineering problems involved in the Hennepin canal, the improvement of the Rock Island rapids, the Moline water power and its adaptability for furnishing electrical power, the cause and effect of

the Mississippi floods. The eclipse of the sun could be described so as to attract general interest. Hundreds would like to learn about X-rays and wireless telegraphy. Other subjects are those in which science comes in contact with agriculture. Would not the farmers of Scott and Rock Island counties appreciate talks on injurious insects, on birds that destroy and on others that protect crops by destroying insects? These subjects are merely suggestive and show what an opportunity the Academy has to take part in the extension of knowledge. There is no reason why many of these papers could not be prepared by the Academy's own brainy and versatile members, and at times scientific men could be induced to come here from Iowa City, from Ames, from Chicago and elsewhere. Courses of popular lectures, of the sort suggested, are given regularly by the Geographical Society at Washington, and are free to members, outsiders being admitted on payment of a small fee. A like plan adopted by the Academy would, it is to be trusted, increase the membership list and make its meetings of interest and value.

READY TO COÖPERATE.

The Academy of Sciences, with its age, record and high purpose behind it, should become the center of the various semi-scientific societies of the city. Its rooms and hall should be thrown open to the medical societies, the agricultural society, the farmers' institute, the pioneers' association, the university extension, and all societies which in any way tend to the advancement and diffusion of knowledge. Should an art gallery ever be established in Davenport, as one certainly should be, it might well find a home in the new building which the Academy hopes to erect.

THE ACADEMY PUBLICATIONS.

The function of the Academy which tells most for its reputation abroad is naturally the publication of its proceedings. This work, supported now by an endowment which might be larger, goes quietly on. Volume after volume is being published, and there is no lack of material for publication. Only papers of the highest grade are accepted and many of these are written by scientists of world-wide reputation. Institutions older and richer than the Academy and located in cities ten times greater than Davenport, may well be envious of our Proceedings.

AN ENDOWMENT NEEDED.

Such are some of the functions of an institution like the Davenport Academy of Sciences. Some of them, such as that of publication, and the amassing of a great and valuable museum and library, it is filling better than could be expected. In others, more has been outlined, perhaps, than the Academy is at present able to undertake, but we need not be discouraged. Before we can accomplish all that we would like to do

we must have an endowment of from fifty to a hundred thousand dollars, and as much more for a commodious fire-proof building. In the meantime, however, we can do something ourselves, something more than merely waiting, and we can hope that in the near future the Academy may be blessed more generously with endowments, may have a new building adapted to its growing needs, and that it may become the center of renewed scientific life and activity.

May 2, 1900 — TRUSTEES' MEETING.

The President, Mrs. M. L. D. Putnam, in the chair; eight Trustees being present. Routine business was transacted.

May 25, 1900 — REGULAR MEETING.

The President, Mrs. Putnam in the chair; eight members present.

The Curator reported the following additions to the Museum during May:

From C. E. Harrison, three trilobites of the genus *Calymene*. From a gentleman in Sac City, Iowa, a peculiar chameleon from the west.

The Publication Committee reported the distribution of Volume VII. of the Proceedings as follows: To foreign societies, 224; to home societies, 147; to individuals, 36; total distribution, 407.

Mrs. Frank G. Allen, Moline, Ill., was elected a Regular Member and Bishop T. N. Morrison a Life Member of the Academy.

E. S. Ballord gave an interesting account of his recent visit to the Grand Cañon. The talk was informal and a discussion accompanied it.

May 28, 1900 — TRUSTEES' MEETING.

The President, Mrs. Putnam, in the chair; nine Trustees present.

The President stated that the purpose of the meeting was to consider the advisability of making the following improvements and repairs: Connect the two buildings, fit up the auditorium, fit up the basement, lay sidewalk, level up the ground, etc.

It was decided that the improvements and repairs should be made and that the President should appoint a committee of three to carry the work to completion.

The following committee was appointed: A. F. Cutter, C. A. Ficke, W. C. Putnam.

The President mentioned the fact that about \$100 would be needed to transport the collection from Griswold College and rearrange the Museum, whereupon J. B. Phelps generously agreed to donate \$100 for that purpose.

June 29, 1900 — REGULAR MEETING.

The President, Mrs. Putnam, in the chair ; ten members present.

The Curator reported additions to the Museum as follows :

From Louis Hyde, very rare specimens of fossil shells gathered from the well-known layer of Pipestone rock at Pipestone, Minn., described by Prof. N. H. Winchell. The layer is twelve feet thick, between two immense masses of crystalline rock several hundred feet thick. From Prof. Otis T. Mason, cast of Eskimo child's head from Clarence, Alaska. From the Smithsonian Institute, in exchange, three Indian baskets—one small Pomo basket, one Heyso basket from California, and an Apache carrying basket. From Judge C. M. Waterman, specimen of *Stigmara fcooides* from Angel's Ferry, Ill. From Edwin A. Clark, Princeton, Iowa, a pair of very old spectacles with large, round glasses and flat nose piece.

The Publication Committee reported the completion of Prof. Starr's paper on "Ethnography of Southern Mexico," being part of Volume VIII., and that the paper on "The Flora of Scott and Muscatine Counties, Iowa," by Barnes, Reppert and Miller, was in the hands of the printer. The committee further reported that Prof. Starr had presented his album, "Indians of Southern Mexico," and four extra plates to the Academy.

Miss Marian E. Sparks, engaged to make a card catalogue of the Library, reported that it would take several months to complete the work. She had written to 104 societies to obtain volumes to fill out sets. Fifty-six had sent the numbers asked for and six had promised to do so. She said about 1,000 to 3,000 volumes should be bound for safe keeping, convenience and appearance.

John R. Putnam, late of China, was elected a Regular Member.

July 27, 1900 — REGULAR MEETING.

First Vice-President, C. A. Ficke, in the chair ; fourteen members present.

The Curator reported the following donations to the Museum :

From Mrs. Grace B. Buford, Rock Island, Ill., an Indian costume, hatchet, pipe, stone hammer or war club, and a cane made from the

"diamond willow." From Joseph Duncan, Chicago, Ill., an Indian dress decorated with beads and a pair of Indian moccasins, presented to Governor Duncan seventy years ago. From W. C. Putnam, the head and antlers of an elk.

Mrs. E. Hurst, Rock Island, Ill., was elected a Regular Member.

The following resolutions of respect to the memory of the late John B. Phelps were adopted :

WHEREAS, In the death of John B. Phelps, the Davenport Academy of Natural Sciences has lost a warm friend and honored associate, and a long-time life member, one who throughout the twenty-five years of his active connection with it has been at all times a ready and most efficient helper, and to whose guidance, both as chairman of the finance committee and as trustee during many years, it is much indebted ; therefore be it

Resolved, That we record hereby our appreciation of his genuine worth, our deep sense of the loss sustained in his death, and our sympathy with his bereaved household.

Resolved, That these resolutions be spread on the minutes of the Association, and that copies be transmitted to the family and to the papers.

C. H. PRESTON.

C. A. FICKE.

W. C. PUTNAM.

In behalf of the Trustees of Griswold College, the Right Reverend Theodore N. Morrison, Bishop of Iowa, formally presented to the Academy the scientific library and geological collection of Griswold College. In making the presentation he spoke of the impossibility of Griswold College continuing its existence and of the increased work that would be done at Saint Katharine's Hall. The desire of the Trustees of the College was that the library and valuable geological collection be kept together where they could be examined and studied by the largest number of people. All scientific work and all other books that the Academy desired are to become the property of the institution and the remainder are to go to the Davenport public library.

First Vice-President, C. A. Ficke, responded in behalf of the Academy in part as follows :

In the absence of Mrs. Putnam, President of our Association, who unfortunately is unable to be present to-night, it becomes my pleasant task, honored Bishop, in behalf of the Davenport Academy of Sciences, to accept the generous gift which the Trustees of Griswold College, through you, so kindly tender. This gift, pleasing in itself because of its great value, is even more welcome as a proof of the fact that the good work of the Academy is appreciated by those who tender it. It is gratifying beyond measure that our Academy was deemed worthy of becoming the owner of a collection and a library which Bishop Lee, Professor Sheldon, Professor Barris and other enthusiastic scientists

and collectors have spent so many years in accumulating. To you, honored Bishop, and through you to the Trustees of Griswold College, I wish to extend the sincere thanks of the Davenport Academy of Sciences for this most generous and valuable gift.

On motion of C. E. Harrison, seconded by Dr. C. H. Preston, it was resolved that the Academy accept the gift, and that sincere thanks be extended to Bishop T. N. Morrison and the Trustees of Griswold College, and that the following report of a meeting of a committee appointed by the Trustees of Griswold College be spread upon the minutes:

The committee appointed by the Trustees of Griswold College at a meeting held June 12, 1900, to whom was referred the disposal of the library and other property — geological specimens, minerals, shells, etc., etc. — belonging to the Griswold College, with power to act, held a meeting at the Episcopal residence, Davenport, Iowa, on July 27, 1900. Present: the Bishop, the Rev. N. S. Stephens, and the Rev. C. H. Weaver, L.L.D.

The Rev. Dr. Weaver was appointed Secretary. The following motion was passed unanimously:

Resolved, That all such books as relate to science, and such other historical books as the authorities of the Academy may think of value to the institution, together with all specimens relating to the several departments of geology, mineralogy and conchology be and they are hereby presented to the Davenport Academy of Sciences, together with the cases in which they are arranged, it being the conviction of the committee that this valuable collection should be kept together and placed where it may be examined and studied by the largest number of people.

THEODORE N. MORRISON,

Bishop of Iowa.

CLINTON H. WEAVER,

Secretary of Committee.

After the meeting, those attending paid a visit to Science Hall, the newly acquired building, in the basement of which the valuable collections were arranged.

September 28, 1900 — REGULAR MEETING.

The President, Mrs. Putnam, in the chair; seven members present.

The Curator reported the following donations to the museum:

From Prof. J. A. Udden, a package of *Fusikina* from the coal measures of Pottawattamie county, Iowa. From W. H. Forrest, a portrait of Mrs. D. S. True; a collection of the larger ocean shells with many smaller forms; corals, ancient and recent, large and small; and minerals — some very fine — from western localities. From G. R. Putnam, a very fine mounted fur seal from Pribilof Islands; the skin of a Greenland polar bear; and a pair of Eskimo gloves. From Mrs. Tracy, Harbor Point, Mich., two polished specimens of coral from the Hamilton group, and a specimen of opalized agate. From W. C. Putnam, four horizontal show-cases and six upright wall cases for the museum.

The Publication Committee reported the completion of the paper on the "Flora of Scott and Muscatine Counties."

Miss Marian Sparks reported progress in cataloguing. On motion it was decided to put in more shelving for the library and to retain Miss Sparks.

The committee, consisting of E. S. Hammatt and C. A. Ficke, reported that due notice of the proposed amendment to the Articles of Incorporation, by dropping the word "Natural" from the title of the Association, had been published in the papers, and upon motion the amendment was made.

In consideration of the donation to the Academy of his submarine collection from the Bahama Islands, Webb Ballord was elected a Life Member.

October 26, 1900 — REGULAR MEETING.

The President, Mrs. Putnam, in the chair ; five members and several visitors present.

The Curator reported additions to the Museum as follows :

From C. E. Harrison, a carefully prepared and mounted skeleton of a rattlesnake. From Elizabeth D. and W. C. Putnam, a large and valuable collection of Indian relics found in the grave of an Ottawa chief near Harbor Springs, Michigan. The collection contains, in part, the skeleton of a man, a number of copper kettles, and all the honorary decorations of a chieftain, the skull being encircled by a silver band, and further ornamented by a small silver turtle, which was the standard of the Ottawa chief, Little Turtle. This chieftain was the hero of the battle between the Ottawas and the Musquatas, which resulted in the extermination of the latter tribe. War implements, such as stone axes, spear-heads, arrow-heads, iron scalping knives and tomahawks, and portions of flint-lock muskets ; a number of large circular silver pieces used as money, and a great number of dress ornaments, brooches, ear-rings, bracelets, etc.; silver crosses with one, two and three bars, which were given the Indians by the Jesuits ; the finger bones of a hand still bearing the silver rings. The collection numbers several hundred specimens.

A committee was appointed to make arrangements for the opening of Science Hall on December 14th, 1900.

November 30, 1900 — REGULAR MEETING.

The President, Mrs. Putnam, in the chair ; eight members and several visitors present.

Thomas Scott, Davenport, Iowa, was elected a Regular Member, and T. D. A. Cockerell, East Las Vegas, New Mexico, and Charles Webster, Charles City, Iowa, were elected Corresponding Members.

The committee on the opening of Science Hall, Friday evening, December 14, 1900, reported, and the following committees were appointed to complete arrangements :

Reception — C. A. Ficke, Dr. A. W. Elmer, Dr. William Allen, Edward Roberts.

Tickets and Door — C. E. Harrison.

Press — A. A. Miller.

Refreshments — Miss Alice Kimball.

Miss Sparks reported the work of cataloguing as nearly completed. The catalogued books include 2,336 works, 10,016 volumes on 983 subjects, and 7,163 cards were used.

The session was closed with a talk by Edward K. Putnam upon the various elements that enter into the English language. He traced the changes of the Anglo-Saxon through middle English into modern English, illustrating the rules governing these changes by examples of modern words and idioms. He also discussed the Norman, Scandinavian and other influences on the language.

December 14, 1900 — OPENING OF SCIENCE HALL.

On this evening, the thirty-third anniversary of the founding of the Academy, Science Hall was dedicated to the cause of science in the presence of an audience numbering about five hundred, including a large delegation from the High School. The Honorable C. A. Ficke, First Vice-President, presided. On the stage were seated the lecturer of the evening, Professor Frederick Starr of the University of Chicago ; President MacLean and Professor C. C. Nutting of the State University of Iowa, and several of the more active local members of the Academy, including the President, Mrs. Mary L. D. Putnam.

The Reverend Dr. J. B. Donaldson, pastor of the First Presbyterian Church, opened by prayer.

In his introductory remarks, Mr. Ficke congratulated the Academy, the citizens of Davenport, and of the State of Iowa as well, on the establishment of Science Hall.

President MacLean said he brought to the Academy and the citizens of Davenport congratulations, not only on behalf of the State University with its faculty of 130 and its 1,500 students, but also on behalf of all the public schools, academies and colleges of the state. The Davenport High School, he said, led all others in the state in sending students to the University and to other higher institutions of learning. He regarded the Academy of Sciences as a valuable addition to the educational facilities of the city and state. Science, he said, was no longer looked upon as antagonistic to religion and poetry, but went hand in hand with all other educational and uplifting influences. He closed with a reference to the achievements of woman and paid a tribute to Mrs. Putnam for what she has done for the Academy.

Professor Nutting, also of the State University, said, in substance :

I represent the scientific department of the State University and we are glad to meet our friends of science here. We feel it is due to the Academy that we should come here this evening. I have often wondered what the people of Davenport are to make of the Academy of Sciences. For some years I have been in charge of a museum and I have been interested in the way the public thinks of and values a museum. A man once came to me and asked, "Will the amusement be open to-day?" meaning the museum. I have often thought I would like to prepare a lecture on "The Public in a Museum," for the reason that this man's remark was significant, indicating the popular notion that a museum is a place where one may go to see things and thereby be amused. Among the objects for which museums are established, the least important is amusement. It should be the aim of the people to seek instruction in the highest sense of that word. A museum is a place for research, for study and for work. I hope the school children of this city will be led to consider this museum from that point of view, and that they will be induced to use freely the valuable collections that you have here. This Academy is unique in that nowhere in the West has such a museum been sustained for so long a time in a city the size of Davenport. I feel that you are to be congratulated on the past as well as on the present achievements.

The Professor closed with the following :

THE STORY OF TWO WOMEN.

There was a woman on whose heart was pressed the heavy hand of Sorrow.
Her heart was bruised, her head was bowed, her life bereft of hope and light.
This woman was not strong, and so she sat her down and cried :

" Woe has come upon me, and my love lies dead, his work unfinished.
No more is heard his name upon the lips of men. With him is Hope
entombed.

Henceforth my life shall be devoid of light, and o'er his grave I'll place
A broken shaft to show the incompleteness of his life cut short of full fru-
ition."

And so it was. Her life was void. His name forgotten in the homes of
men.

Again there was a woman on whose heart was pressed the heavy hand of
Sorrow.

Her heart was sore, her head bowed low, her life bereft of light.
But strong this woman was, and brave, and she stood up amid the stress
Of this her dire calamity, and gazed undaunted on the face of Sorrow.
" My love shall live ! " she said. " His work unfinished I take up. My life
I give

To see his hope fulfilled. His name shall still be spoken in the courts
Of Wisdom, and a monument I'll raise to show fruition of his cherished
hopes ! "

And so it was. And wise men came to bring her aid. And lo ! Her life
was full

Of light, and blessed with fruitful works. No broken shaft raised she
Above his tomb. Instead she reared a monument enduring as is Truth
eternal.

And the wise men bring the tribute of their learning to this shrine.
His name is honored still in Wisdom's court. His work complete. His
hope fulfilled,

And Sorrow conquered, chastened, owns the sway of Love.

Professor Starr, of the University of Chicago, said he had known
the Davenport Academy of Sciences for twenty-five years. When a
schoolboy in Iowa he had been attracted by the reports of its meet-
ings, and especially in its explorations of the mounds. Ten years
later, while teaching in Coe College, Cedar Rapids, he felt the need
of a scientific library, and came to Davenport, where he spent ten
days studying in the Academy's library and museum. Since then his
interest in the institution had been increasing. Continuing, he said,
in substance :

The people of this city should be proud of the Academy. In the
first place, we have here a library of many volumes that are rare and

precious. We have the old building, we have the new building and we have the museum — one of the best, according to its size, to be found in the whole country. In that museum are many rare treasures. But, after all, the museum is one of the least important things about this Academy, for the monthly meetings, where the handful of enthusiastic devotees of science come together to keep the sacred fires lighted, are the important things. The publications of the Academy are also important, for they penetrate to all the libraries and universities of the world and bring back in exchange the thoughts of all scientific scholars to enrich the Academy's library. The Davenport Academy is known in many cities of the old world where the name of Chicago is unknown, and where the University of Chicago has not yet been able to make itself felt.

But what of the future? One sees erected on this site a large building with its corps of officials, its museums occupying one of the floors that extend from the street to the alley. One sees that courses of lectures are given every year, and the public is interested as never before in the study of science. To those who are interested in this work it is not necessary to call attention to the thirty-three years of achievement that lie in the past. Now for the future. It is the duty of those who are interested in this work to go out as missionaries and interest others until the whole city shall be alive to the value and the helpfulness of this magnificent local institution.

Professor Starr then delivered his interesting lecture on "The Indians of Southern Mexico," which was illustrated by stereoptican pictures.

At the conclusion of the lecture, opportunity was given those present to inspect the Griswold College and other collections which had been placed in the museum annex in the basement of the newly-acquired building, where refreshments were served.

Many letters were received from friends congratulating the Academy on its success. Among these letters, one from Prof. McBride seemed of especial interest:

TO MRS. M. L. D. PUTNAM, *President of the Davenport Academy of Sciences.*

DEAR FRIEND — I regret exceedingly that a previous engagement will prevent my being present on December 14 to bring you in person my earnest congratulations on the triumphant management of the Davenport Academy of Sciences. There is certainly no other success like it in Iowa, and I do not believe there is in any other state, and men of science everywhere are bound sooner or later to recognize that fact.

Through evil report and good report, in good times and bad times, you have persisted with a perseverance and patience beyond all praise, determined that whatever else might come and go, your fortunate city should not be without the inspiration of modern scientific research and the stimulus of modern scientific thought. For three and thirty years, especially from those days when your gifted young member, J. Duncan Putnam, charmed

us all by the beauty and elegance of his works, all too early ended, until the present hour, in the world's Council of National History, the voice of Davenport has never once been silent. The Davenport Academy, may it flourish forever, growing in usefulness and in the good esteem of all intelligent men.

Very sincerely yours,

Iowa City, Iowa, Dec. 10, 1900.

THOMAS H. MCBRIDE.

December 28, 1900 — REGULAR MEETING.

Vice-President C. A. Ficke in the chair; seven members present.

The Curator reported the following additions to the museum:

From C. E. Harrison, the skull of a woodchuck; two large, framed photographs, the first, of Scott County's first court house, the second, of the ruins of Hill's block, northwest corner of Brady and Third streets, destroyed by fire on the night of February 22, 1876. This is of special interest, as upon that night the Ladies' Centennial Association was having a fair and festival in Hill's Oper House for the purpose of raising funds to publish Vol. I. of the Proceedings of the Academy. From Capt. W. P. Hall, a box containing two hundred flint instruments of various shapes and sizes, and twelve grooved axes, some worn with age or use. From Jacob Shibe, Rapids City, Ill., a large Scotch curling stone, highly polished, weighing $37\frac{1}{2}$ pounds, and made of Scotch granite. Through favor of Bishop Morrison and the Board of Trustees, the Griswold College cabinet has been presented to the Academy, and the gift deserves grateful recognition. It comprises several distinct collections, among which are the fresh water shells of the immediate vicinity. As early as 1866, Agassiz visited Davenport, called on Prof. Sheldon and expressed his astonishment at the range of the collection, saying that it seemed to him the richest conchological section between the Atlantic and Pacific oceans. With that thoroughness and system which characterized all his work, Prof. Sheldon arranged the shells so as to facilitate their study. They were so placed on the shelves that the different sizes, forms and their internal structure might be taken in at one view. Prof. Sheldon furnished a similar collection for the cabinet at Harvard. There are over seven hundred marine shells, some collected and some obtained by exchange. They are from China, Japan, West Indies, Sandwich Islands, the Mediterranean, the waters of the American coast, and from the depths of the ocean. The collection of minerals is of wide range, including calcedony from India, volcanic rock from Iceland, silver and gold from the Rockies, crystals of quartz and lime from different parts of the United States. A mass of meteoric iron from Dakota, so pure that it is malleable. From the quarries around Davenport, a valuable collection of fossils, arranged for college class-work. Foreign fossils were added for the purpose of comparison. The cabinet of Rev. Dr. Peet, of great extent and value, was gathered by extensive travel in foreign countries. The collection of crystals is the most interesting

part, wonderful in the size and beauty of each individual crystal, and, still more wonderful, in the variety and delicacy of color, brought out by massing the crystals of different minerals. In passing I note the collection of garnets in mica-slate, pronounced by Prof. Silliman to be the finest specimens ever shown. It is a matter of deep regret that the systematic arrangement of this great collection has not been preserved, many specimens being misplaced and many labels lost. The donation of Webb Ballord, a member of the "Bahama expedition," is a thoroughly scientific collection. It teems with wonderful and various forms of life in tropical waters, pleasing to the eye of the casual observer and instructive to the student of natural history. J. H. Paarman is now gathering together the various zoölogical specimens and arranging them in a scientific manner. I trust the members of the Academy will appreciate his excellent work.

The following resolution was unanimously adopted :

E. S. Carl, a prominent citizen of Davenport and an honored member of the Academy of Sciences, having died in October, 1900, the members of this Academy wish to place on record their appreciation of his many admirable qualities and of his interest in all enterprises pertaining to the improvement and advancement of the City of Davenport, and especially of the great interest he has always manifested in this institution.

W. C. PUTNAM.
C. A. FICKE.

Resolutions were also adopted on the death of Mrs. J. J. Humphrey, a Regular Member.

In connection with the recent dedication of Science Hall, resolutions were passed thanking the local press, the friends of the Academy who came from a distance to participate in the exercises, and to the friends at home, whose efficient aid made the entertainment such a success.

On motion, the chairman appointed the following nominating committee to nominate officers for 1901 : C. A. Ficke, A. F. Cutter and E. S. Hammatt.

A visit was then made to the zoölogical collection in the museum, and Mr. Paarman explained his method of classifying and arranging the specimens.

ELECTIONS TO MEMBERSHIP.

JUNE 1, 1899, TO MAY 1, 1901.

CORRESPONDING MEMBERS.

W. D. Barnes, Morgan Park, Ill.....	July 28, 1899.
Prof. E. J. Hill, Englewood, Ill.....	July 28, 1899.
Rev. Kempke, Davenport, Iowa.....	July 28, 1899.
T. D. A. Cockerell, East Las Vegas, New Mexico	November 30, 1900.
Charles Webster, Charles City, Iowa.....	November 30, 1900.

REGULAR MEMBERS.

Residence, Davenport, unless otherwise stated.

W. G. Smith	July 28, 1899.
Rev. G. S. Rollins	July 28, 1899.
Horace Roberts	September 29, 1899.
A. L. Hageboeck	September 29, 1899.
John M. Helmick	September 29, 1899.
Ernest C. Oberholzer	October 27, 1899.
Mrs. Frank Gates Allen, Moline, Ill	May 25, 1900.
John R. Putnam, China	June 29, 1900.
Mrs. E. Hurst, Rock Island, Ill.....	July 27, 1900.
Thomas Scott	November 30, 1900.
J. H. Paarmann, Iowa City, Iowa	January 26, 1901.

LIFE MEMBERS.

Bishop T. N. Morrison.....	September 29, 1899.
Thomas W. Griggs	September 29, 1899.
Wilson McClelland.....	October 27, 1899.
Webb Ballord	September 28, 1900.
A. F. Cutter	January 26, 1901.

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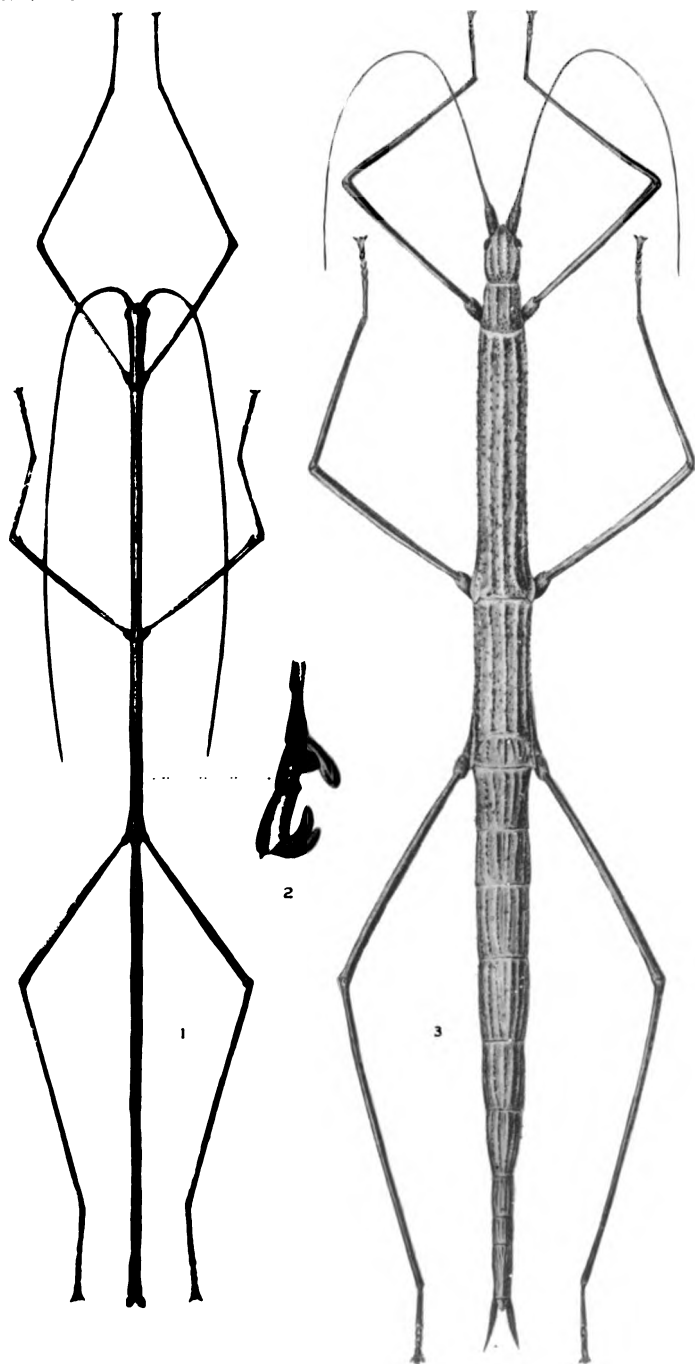
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PLATE I.

- Fig 1. *Bacunculus tenuescens*. ♀. Florida.
2. *The same*; lateral view of end of abdomen. ♂.
3. *Sermyle strigata*. ♀. Texas.



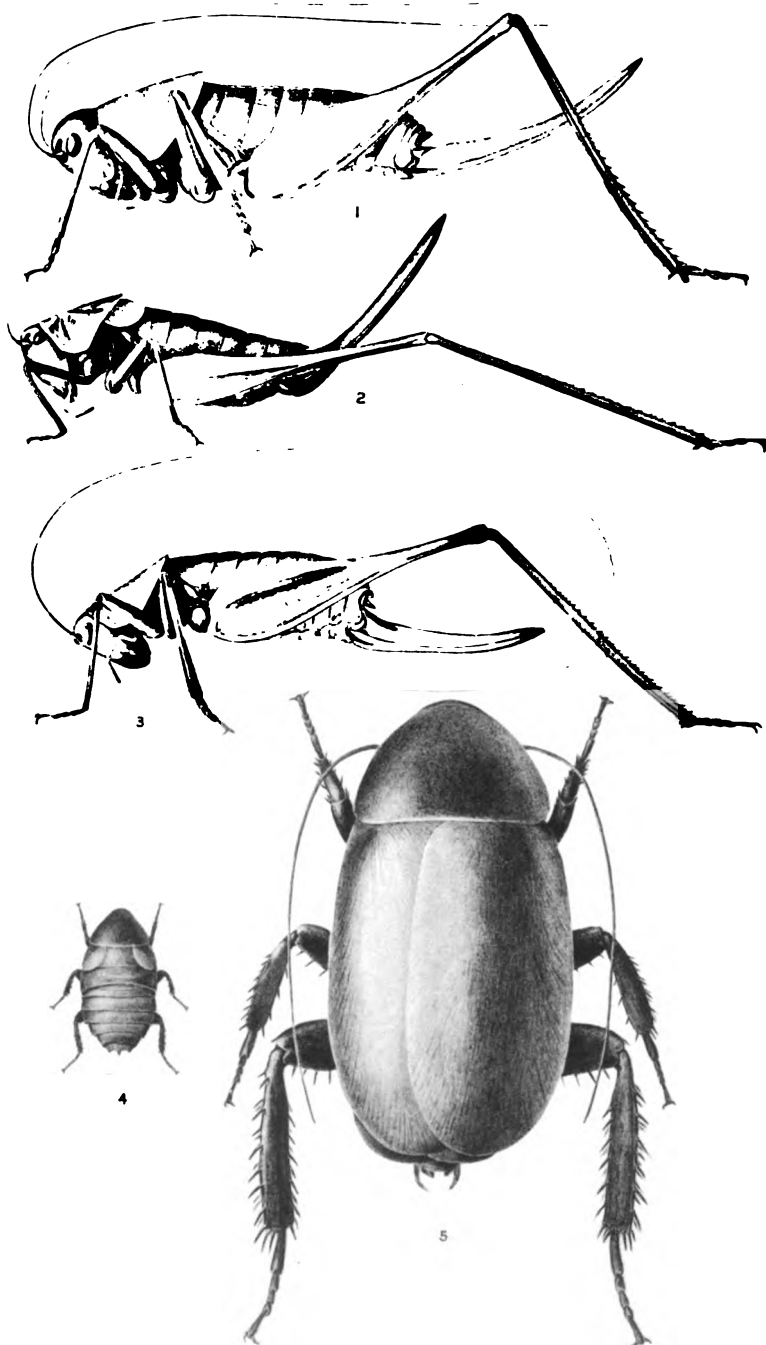
Phyllorhiza (Hemiptera) 1881.

Phyllorhiza, ad. nat.

PLATE II.

All the figures are enlarged two diameters.

- Fig. 1. *Eremopedes unicolor*. Arizona.
2. *Idionotus brunneus*. California.
3. *Ateloplus notatus*. California.
4. *Loboptera americana*. Arizona.
5. *Pelmatosilpha rotundata*. Texas.



Velarifictorus scutellatus (F.)

J. Henry (F.), at nat.

PLATE III.

Both the figures are enlarged two diameters.

- Fig. 1. *Hormilia elegans*. New Mexico.
2. *Plectrotettix patriae*. California?



Chloris flava (Linn.)

J. Henry Blake, ad. nat.

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